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# The Journal of the American Medical Association

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## INTRAVENOUS USE OF DYES*


JOHN W. CHURCHMAN, M.D.
NEW YORK


When interest in the triphenylmethane group of dyes was reawakened by the studies of their selective powers, reported in 1912 and successive years, the question of their adaptability to intravenous injections immediately arose and (of course, with the ultimate treatment of septicemia in mind) Herz and I,[1] in 1913, studied the fate of gentian violet in the animal body. We showed conclusively that, after intravenous injection, this dye disappeared from the blood stream in about one hour and a quarter. We also made numerous experiments at that time to see whether bacteria floating in the blood stream could be killed by injected dye. The general conclusion of all of this work was stated, in 1924, as follows: "I have never been able to kill organisms circulating in the blood by intravascular injection of gentian violet. At the present time there is nothing to suggest that it is now possible to do for bacteria what quinin does for malaria." There is the soundest kind of experimental evidence for this statement, and the observations have been amply confirmed by others, most recently by Gatch.[2] Nevertheless, a considerable body of evidence has accumulated from the clinical field which appears to conflict with this conclusion, and it is of a kind which, far from dismissing with a gesture, we are forced to take into account. It is our present purpose to examine some of the fundamental conceptions in this field to see whether apparent contradictions between experimental and clinical results may be harmonized and to determine to what extent the reigning hypotheses in the chemotherapeutic field are justified by fact.

One must begin with definitions, and septicemia is the first word to be defined. So loosely has this word been used that it is now difficult to put it within the confines of logic. The word indicates certainly, at the very least, that pathogenic organisms are present in the blood. But if we define septicemia as a condition in which bacteria may be demonstrated in the circulating blood, we include too much, for we include transient conditions such as the bacteremia that is doubtless often present in healthy persons after meals, and we include such diseases as typhoid fever and pneumonia, which by reason of specific manifestations are clinical entities, and if regarded as septicemia at all are very much more than septicemia. Since the cultural studies of the blood in known cases of septicemia may vary in result from day to day, it is impossible to state how frequent septicemia is, but it is quite likely that in more diseases than is usually supposed the causative bacteria at some stage make their way into the blood. In a disease such as syphilis, the moment the responsible organism leaves the local lesion and escapes into the blood stream is marked by a complete change in clinical picture from primary to secondary syphilis, and we are made aware of what has happened. This is not always the case in diseases in which constitutional symptoms are present from the start, and in these conditions the distinction between symptoms due to absorption of toxic products and those caused by the presence of bacteria in the blood cannot be sharply drawn. Just when a frank lobar pneumonia changes to a septicemia is not always easy to say, and when the change has occurred one would doubtless continue to describe the condition as a case of pneumonia with pneumococci in the blood rather than a case of septicemia.

A definition of septicemia free from all possible objections would thus appear to be impossible to frame. Perhaps we might describe the condition as one which arises when, as a result or complication of a focal infection (which itself may have produced severe symptoms, slight symptoms, or no symptoms at all), the protective barrier between bacteria and host has broken down. Organisms have therefore appeared in the blood, the disease has ceased to be local, and its gravity has at once greatly increased. This focal infection may be obvious (like an inflamed tonsil), or it may be hidden (like an infected heart valve), or it may be difficult and occasionally impossible to demonstrate; but portal of entry into the blood stream there must have been. It is a common mistake to imagine that in septicemia bacteria travel for an indefinite period round and round in the blood stream, reproducing as they go. This is not an accurate picture of what occurs. The micro-organisms have not originated in the blood. They have come somewhence and are going somewhither. Their source is the focus of infection; their destiny, other organs, in which they may set up lesions, or the filtering organs (lymph glands, etc.) where those of them which have escaped the antibacterial defensive mechanism of the circulating blood are either in part or in whole destroyed or eliminated. Eliminate their source, as by complete excision of the focus, and you cut off the supply. They will then fairly soon disappear from the blood stream, provided they have not already produced secondary foci elsewhere, and provided the defensive mechanism of the body has not already completely broken down. What happens is similar to what happens when a water

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* Read at a Symposium of the American Chemical Society, Baltimore, April 10, 1925.

* From the Laboratory of Experimental Therapeutics, Cornell University Medical School.

1. Churchman and Herz: J. Exper. Med. **18**, No. 5, 1913.
2. Gatch, W. D.; Trusler, H. M., and Owen, J. E.: Treatment of General Septicemia by Gentian Violet and Mercurochrome-220 Soluble, J. A. M. A. **85**: 894 (Sept. 19) 1925.

supply is purified by removing an offending source in the water shed; organisms already in the stream soon disappear in natural ways. It is, of course, not strictly true to imagine that no damaging process is set up by the bacteria as they travel in the vessels. But the damage they do there is relatively slight compared with the damage they do at their source and at their destination. The mere presence of the bacteria in the blood stream is not, therefore, the most serious feature. The most serious feature is the fact that they are being transmitted by the blood stream, that a barrier has given way, and that a local disease is becoming general.

Considerations of this sort bring out, though it is hoped they do not overemphasize, the transitional nature of septicemia, a word which, while purporting to describe a definite disease, really includes a large number of different diseases as unrelated in clinical picture, in pathologic basis and in gravity of prognosis as measles and typhoid fever.

The matter is further complicated by the fact that the significance of septicemia is in large part determined by the character of the particular organism that has appeared in the blood stream. A septicemia caused by *Staphylococcus aureus* is one thing, a septicemia caused by *Streptococcus hemolyticus* is quite another, and a septicemia in which *Bacillus anthracis* is isolated from the blood is another, and very different still. Thus, a patient may present himself with a local infection (let us say a boil) and with the causative organism already in the blood. The focus is readily accessible to adequate treatment; the organism isolated from the blood may be only mildly virulent, and no lesions may have been produced elsewhere in the body. His malady is in no way to be compared with that of a patient seriously ill from an ulcerative endocarditis caused by a virulent *Streptococcus viridans*, with organisms in the blood and a streptococcus pneumonia.

These distinctions are elementary, but they are by no means always made. They are gone into in some detail here because failure to make them may account, in part, for the conflicting evidence as to the value of the dyes in the treatment of septicemia. That a *Staphylococcus aureus* septicemia, arising from a lesion susceptible to adequate surgical treatment, has subsided after intravenous injection of gentian violet is no reason whatever for expecting a septicemia caused by *Streptococcus hemolyticus* which has reached the blood stream from an acute endocarditis to subside. Failure to take into account the variation in the seriousness of different types of septicemia may account in part for the conflicting evidence as to the value of the dyes in the treatment of this condition, and this probable source of error is the first to which I wish to call attention.

What is the nature of the clinical evidence for the value of the dyes in septicemia? Its nature may be illustrated by the citation of a case.

An infant, aged 15 months, was admitted to the wards, suffering from a severe bacillary dysentery and otitis media, and had developed large multiple staphylococcus abscesses and staphylococcus septicemia. During the three weeks previous to intravenous treatment with gentian violet, he had grown gradually worse. His temperature had reached 106, and he was moribund. *Staphylococcus aureus* had been demonstrated in two blood cultures made during the three days preceding the first injection of dye. There were about ten colonies per cubic centimeter of blood, a massive infection. Three intravenous injections of gentian violet were given at twenty-four hour intervals. Blood cultures made immediately preceding the second and third injections were sterile. After the third injection an enormously enlarged spleen promptly disappeared, the temperature fell, improvement at once set in, the abscesses healed, and he was discharged from the hospital two months later entirely well.

Now what value is to be attached to an observation of this kind? Certainly, it is an observation not to be lightly dismissed. Yet we cannot avoid the admission that the results may have been a pure coincidence. The promptness with which cure followed treatment in this patient, and in a number of other striking ones that might be cited,[3] may seem to make such an explanation far fetched. Unfortunately, similar coincidences are known to occur and the science of therapeutics is littered with ill advised conclusions due to failure to recognize the possibility that sequences of this kind may be accidental.[4]

Septicemia is unfortunately a disease subject to this kind of misinterpretation. One has only to recall the variety of chemical agents whose injection into the blood stream has been followed by recovery, to be warned against too hasty assumptions that post means propter. For it is well known that, in septicemia, spontaneous recovery does perhaps more often than occasionally occur, and this sometimes even in severe cases. Nevertheless, the coincidence, if coincidence it be, in certain of the cases treated with anilin dyes has been too striking to dismiss without careful scrutiny. Perhaps the most brilliant results have been reported by Young,[3] using sometimes mercurochrome-220 soluble and sometimes gentian violet. One cannot but be struck with the extraordinary promptness in the change in the clinical appearance following immediately on the intravenous use of dyes in many of his cases, and the conclusion which he draws, that the sequence was one of cause and effect, is indeed tempting. One feature of many of the successful cases has been the promptness with which the blood cultures became and remained negative. If this feature were at all constant it would, from the therapeutic standpoint, be even more important than the recovery of the patient, for it would point to the possibility of the desired sterilisans magna for bacterial disease. Unfortunately, it is by no means constant.

In addition to the brilliant recoveries thus far referred to, there is another group of cases which is very puzzling to interpret. A typical instance may be cited.

A girl, aged 10, whom I recently saw in consultation, fell ill of left-sided acute mastoiditis. The mastoid was opened and cleaned out. Following the operation, signs of sinus thrombosis developed. The jugular vein was ligated, and the clot removed from the sinus. Signs of septicemia then appeared, and *Streptococcus hemolyticus* was isolated from the blood. At this time, several weeks after the onset, the girl was very ill indeed, her temperature having reached 106. She had been given blood transfusions, without apparent improvement. Blood cultures were constantly positive. Intravenous injections of gentian violet were advised, and during the next ten days, five were given. The blood transfusions were also continued. After the first four injections of gentian violet, the blood cultures continued positive and the disease was apparently unabated, but following the fifth injection negative cultures were obtained, the symptoms began to subside and the girl made a complete recovery.

3. The results in the case here referred to are no less striking than in a number of the cases treated by Young, Hill and Scott with mercurochrome or gentian violet, and their latest publication should be read in order to appreciate the possibilities in this field. Young, H. H.; Hill, J. H., and Scott, W. W.: Treatment of Infections and Infectious Diseases with Mercurochrome-220 Soluble, Arch. Surg. **10**: 813-924 (May) 1925.

4. This striking result may be compared with the case reported by Gatch (Footnote 2).

In this case, as in many of the reported cases, the picture is complicated by the fact that other therapeutic measures than the injection of the dye were employed and that these are measures which have themselves some efficacy in the treatment of septicemia. What value have complicated cases of this kind as evidence? It is difficult to say.

It is necessary, moreover, to remind ourselves of the fact that while the strikingly successful cases, of which quite a number have accumulated, receive in a question of this sort due consideration, the failures run some risk of being overlooked. How numerous these have been no one knows, but their number has been too large to be dismissed. The only convincing way in which this question can be decided statistically will be by comparing the mortality rate of a large series of septicemia cases treated with the dyes with that of a similar series of untreated cases, and no such comparison has as yet been attempted.

So much by way of warning to those who are tempted to overenthusiasm for chemotherapy by means of dyes. The tendency to dismiss with a gesture data which cannot be explained away is equally unfortunate with zealotry, and those who have argued that, since failures occur, no attention need be paid to successes should be reminded that in view of the protean nature of septicemia a perfect recovery record is, even if the dyes prove to be ideal chemotherapeutic agents, by no means to be expected. We should be prepared for and not frightened by many failures. Even in the most highly developed sphere of chemotherapy (in the treatment of syphilis and malaria), many failures occur, and the intraspinal injection of antimeningococcic serum is by no means to be scorned because it fails in nearly 30 per cent. of the cases. Certainly no chemotherapeutic substance, however effective, may be expected to save cases in which the focal infection is inaccessible, in which complications (themselves likely to prove fatal) have already developed, in which the vital forces have been drained by the intoxication beyond the point of recovery, and in which strains of peculiarly resistant bacteria are present. The antagonist in this field is no less obligated to explain successes than the exponent to explain failures.

It might be supposed that the difficulties of reaching a sound conclusion in this question could be readily overcome by experimental study, but workers in this field are sorely handicapped by the fact that the very procedures they would employ to find out the truth have proved none too reliable. That the results of experiments made in glass on the phenomena of bacteriostasis cannot always satisfactorily be transferred to the animal body is well enough known. As a rule, chemical agents are less effective against organisms in the living body than against the same organisms in the test tube. The difference in behavior is sometimes, strangely enough, in the opposite sense, as Ehrlich showed so conclusively for some of the arsenicals.

It is also an unfortunate fact, and one which is not widely appreciated, that a true bacterial septicemia, corresponding accurately to the disease in man, is difficult to produce in laboratory animals. The facts, therefore, are not easy to obtain by experiments. This is one of the reasons, among many, why the chemotherapy of bacterial disease lags so far behind the chemotherapy of parasitic diseases. This lack of a trustworthy instrument of observation has so discouraged certain workers in this field as to make them abandon the quest and trust the future to empiricism. Empiricism in therapeutics has given us quinin, mercury and the iodids, and is hardly, therefore, to be treated with contempt. But it is discouraging to find that it cannot yet, in the case of bacterial diseases, be replaced by experimental chemotherapy, as has been so successfully done in the case of parasitic diseases. There is, however, no reason to despair. Laboratory methods still supply ample opportunity for experimentation which is continually uncovering good leads. Only, there will always be a large element of chance in translating the good leads into important therapeutic results.

It has been indicated that the discrepancy between the successes (granting for the moment that they are not accidental) and the failures may, in part, be harmonized by bearing in mind that no two cases of septicemia are exactly alike and that, therefore, uniform results are not to be expected. It is possible to harmonize also the apparent discrepancy between the absence of theoretical evidence for expecting the intravenous use of dyes to be of avail in the treatment of septicemia and the moderate degree of clinical success which seems to have been obtained.

The modern attempts to combat septicemia by chemotherapeutic means are entirely dominated by two conceptions of Ehrlich. These conceptions are so ingenious, they were based on such skilful experimentation, they presented to the mind so clear a picture of therapeutic principles, and they led in Ehrlich's hands to such splendid results, that they were adopted with enthusiasm in the hope that they could be transferred from the parasitocidal field, in which Ehrlich's triumphs had been won, to the bacterial field still largely uncultivated. There were facts, as Ehrlich himself knew full well, that could not be entirely squared with the theory. These facts, and others which have since come to light, have led to considerable modification of the fundamental conceptions, so that certain observers are now inclined to doubt whether the chemotherapeutic success which Ehrlich achieved is really based on the mechanism he hypothecated.

The first of the fundamental conceptions of Ehrlich was the theory that curative substances effective against organisms in the blood stream owed their efficiency entirely to specific chemical affinities between the drug and the parasite. Ehrlich's early idea probably was that the contact between the parasite and parasitocidal substance which did the work took place in the circulating blood; but he found that atoxyl was more effective in the animal body than in the test tube. He therefore modified his views by suggesting that atoxyl did its work by being changed in the body into a trypanocidal substance or by provoking the formation of such a substance in the tissues. His doctrine of specific chemical affinities in its simple and diagrammatic form therefore underwent considerable modification.

Ehrlich himself was, of course, perfectly familiar with what occurs in septicemia. But it is a common mistake since his time to assume that bacteria in the blood keep coursing about in the stream more or less indefinitely, and that injected antibacterial substances course about with them so that they have ample time in which to do their work. As a matter of fact, chemical substances do not remain long unchanged in the blood, as I have shown for gentian violet, and as Hatcher has recently shown in a much more striking way for quinin. Furthermore, the length of time which any given organism spends in the blood stream

cannot be very great. If the supply of organisms be checked by excising the focus or blocking it off (as is done in ligation of the jugular vein for sinus thrombosis), the bacteria as a rule soon disappear. It is therefore clear that the time which the antibacterial substance has to exercise its function against a given organism in the blood stream must be quite short and is not to be measured in hours but possibly in seconds. It seems hardly likely that the dyes in the strength in which they have been used in human beings have been able to strike any such sudden blow as this.

Let us for the moment and for the sake of argument abandon the idea that organisms floating in the blood stream are to be killed by the contact made within the vessels, since the drug is present there only in great dilution, and the contact between the drug and the organism may be extremely transient. Will it then be impossible to harmonize, as we set out to do, the apparent success of the dyes in septicemia with physiologic facts? Not necessarily.

In the first place it is possible that the dyes, like atoxyl, are changed in the body into a substance more potent than the mother substance was in the test tube. Or it may be (and this hypothesis is now popular) that the dyes do not act directly but indirectly by stimulating the formation of a powerful bactericidal product in the body. It is unfortunately rather widely believed without, I think, any proof, that acriflavine injected into the blood stream leaves an impression on the serum which has been rendered, through contact with the dye, highly bactericidal. This belief is based on an experiment made by Browning, whose work is not to be lightly criticized, but the conclusion that he draws was, I am convinced, a curious case of misinterpretation. However, it is not impossible that the dyes may stimulate, as certain of the arsenicals are assumed to do, the tissues to produce antibacterial substances, though there is no proof that this change takes place.

Apart from these rather remote guesses, there is another consideration that should engage our attention for a moment. When dyes such as gentian violet are injected into the blood stream, they are rapidly carried to certain organs in which they remain in some concentration for a fairly long period of time. It is possible that at these sites they may have a much better chance of exerting their bacteriostatic effects. Something of this kind may have occurred in the cases of septicemia successfully treated by the dyes and more particularly in the interesting cases of venous thrombosis apparently cured by Shallenberger [5] through intravenous injections of gentian violet. Indeed, one wonders whether something of the kind may not be what really occurs, more often than has been thought, when syphilis is cured by arsphenamin. When the chancre is made to disappear by this drug, we are sure that the effective contact has been made locally and not in the blood stream. In this stage of the disease, spirochetes are not present in the blood, so that the drug must have killed the parasites in the local lesion. Hatcher [6] has recently shown that in the cat, at least, quinin (except in minute traces) is present for not more than one minute after intravenous injection, and, though in the human being it probably remains in the blood a slightly longer time, it disappears very quickly. So that one wonders whether in the cure of malaria, too, the effective contact is not made outside the vessels themselves, possibly in the spleen.

Bacteriostasis (or, better, genesistasis—an inhibition of reproduction) may also have played a part in the results that have been reported in septicemia. This word was introduced by me in the first publication on gentian violet in 1912, and has been constantly employed since because it describes accurately the effect of the dyes on bacteria. This effect is primarily an inhibition. The dye may only stop motility, it may check sporulation, it may prevent fission, it may produce a curious condition of the bacteria which can only be described as suspended animation, a condition in which they lie dormant for long periods of time, finally becoming active and virulent again; or it may cause actual death of the organism. Which of these results is obtained depends on the particular dye and the particular organism used for the experiment, since many of the dyes are quite selective in their action; and, of course, on the strength of the dye and the time of exposure. It is therefore difficult in any given experiment to say whether the organisms have been actually killed or whether one or more of the inhibitory processes referred to has been initiated. It has been experimentally proved, particularly for gentian violet and other triphenylmethane dyes, that, even in very high dilutions, they possess the power of checking the reproductive mechanism of bacteria, and it is quite possible that this bacteriostatic power of therapeutic agents will come to play an important part in the treatment of infection. If the blood stream and through it the tissues could be kept in a condition inimical to the growth of bacteria (and very small amounts of dye might accomplish this purpose), a state of affairs might well be produced in which with this slight aid, though no organisms have actually been killed, the patient might turn defeat into victory. Such a generalized bacteriostasis has never been proved to exist after dyes have been injected, but it is quite likely that it does exist, at least for a short time. In the case of bismuth, Kolle has shown that such a process does actually occur. This observer injected into the ear of syphilized rabbits a bismuth preparation which remained there more or less permanently. So long as the bismuth was present, the spirochetes were prevented by the small amount of the substance absorbed into the circulation from developing; but, the moment the bismuth deposit was removed by excision, reproduction of the dormant organisms at once occurred. I showed ten years ago that *Bacillus anthracis* could lie dormant in the tissues in a similar fashion for many days, suddenly reproducing (when the stain had been sufficiently changed by the tissues) and killing the animals. Both of these are instances of true genesistasis within the animal body.[7]

Another possible explanation of the effect of dyes in septicemia must be considered. It has long been known that chemical substances, and among them the anilin dyes, reduce somewhat the activity of toxins. Behring,[8] in 1889, made observations of this sort with methyl violet, safranin and malachite green. Perhaps the best known work on this subject was done by Flexner and Noguchi,[9] who studied the fluorescent eosin and regarded the success they observed as photodynamic, since light undoubtedly played a part.

5. Shallenberger, W. F.: Surg., Gynec. & Obst. **39**: 291 (Sept.) 1924.

6. Personal communication. Proc. Soc. Exper. Biol. & Med. **22**: 141 (Dec.) 1924.

7. Churchman: Tr. Tenth Annual Meeting National Association for Study and Prevention of Tuberculosis, 1913.

8. Behring: Ztschr. f. Hyg. u. Infectionskrankh. **6**: 117, 1889.

9. Flexner and Noguchi: J. Exper. Med. **8**, 1906. Noguchi: Ibid. **10**: 30, 1908.

Flexner and Noguchi stated that "even in the highly sensitive guinea-pig, tetanic symptoms may be restrained, provided the eosin is brought into close relation with the developing poison before it is fixed by the nervous tissues or reaches the general circulation." And Noguchi, working with snake venom, concluded: "The toxicity of all the venoms (cobra, daboia and crotalus) is more or less diminished by eosin and erythrosin and sunlight." My own experiments on this phase of the subject have led me to conclude that gentian violet in the strengths used for intravenous injection is without effect on toxins, but these experiments have not been very extensively done.[10] It should be borne in mind that mercurochrome-220 soluble is a combination of a metal and a fluorescent dye, and the possibility exists that the good effects which have followed its intravenous use may have been due to a photodynamic process. Even if this is the case, however, it should be remembered that the effect of these dyes is chiefly inhibitory. There is no reason to suppose that they could absolutely neutralize the toxins, but only to suppose that they may hold them in check sufficiently long for the patient to win his own battle; so that a stasis or inhibition of toxin would account for the phenomenon just as a stasis or inhibition of the bacteria, as has been suggested, accounts for them.

The second fundamental hypothesis of Ehrlich was his conception of therapia sterilisans magna; that is to say, complete sterilization at a single "shot" of an animal with a high grade infection. This he posited as the therapeutic ideal, implying if not actually stating that anything less was futile. The epoch making success which crowned his loyalty to this ideal made it quite natural that such an ideal should dominate this field of medicine. As we leave Ehrlich's peculiar domain, which was the development of trypanocidal and spirocheticidal substances, and take up the consideration of the treatment of bacterial disease by way of the blood stream, it is proper to ask whether there are any reasons to justify us in moving away a little from Ehrlich's point of view. It is certain, in the first place, that nature herself does not proceed in this way. She is able, in many cases with success, to combat blood infections; but she does it not at one stroke but by deliberate mobilization of her defenses and by enlisting the support of phagocytosis, antibody production, and so forth. This is no proof that complete sterilization of the blood at a stroke might not be advisable if it were possible, but it does lead us to inquire whether it is absolutely necessary. The fact that septicemic patients often recover spontaneously indicates that the struggle between the host and the invader is usually a close one. In many cases, doubtless, very little aid might be needed to turn the tide of battle in favor of the patient. Such aid might be provided by a partial sterilization or even by the production of conditions in the body, which make it difficult for organisms to grow though none of them had been killed. Certain it is that at the present time a sterilisans magna, in the original Ehrlich sense, is very difficult if not impossible to produce. Would it be advisable to produce it if such a thing were possible? It is by no means certain that it would, at least in every case. If the blood and tissues were invaded by an organism capable of producing an endotoxin, sudden wholesale death of the bacteria followed by lysis and absorption of the freed endotoxin might well produce serious results. Results of this kind do actually follow the injection of large numbers of the nonvirulent *Bacillus prodigiosus,* which promptly undergo lysis with the liberation of toxic products and the production of severe symptoms. Results of a like nature have also been actually reported after the use of substances which probably do bring about a large scale destruction of tubercle bacilli.

Considerations of this kind lead us, then, to the conclusion that the failure of dyes to effect a sterilisans magna under experimental conditions which we can control does not absolutely preclude the possibility of their efficacy in the treatment of septicemia; and we arrive once more at a possible means of harmonizing the apparent conflict between experimental results and clinical observation.

414 East Twenty-Sixth Street.

10. Churchman, J. W.: Proc. Soc. Exper. Biol. & Med., Feb. 17, 1914.

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# RENAL FUNCTION

## THE RESULTS OF EXPERIMENTAL WORK WITH MORPHIN AND ATROPIN *

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Morphin, or morphin in combination with one of the atropin group, is used by most surgeons prior to operation as an adjuvant to general anesthesia. There are some, however, who do not use it, or who administer it with some concern, especially in urologic conditions when kidney function is poor.

Standard textbooks on the physiologic action of drugs give us very little definite information concerning the action of morphin on the kidneys, and a paper [1] recently published in THE JOURNAL reveals the fact that there is by no means unanimity of opinion among the leading surgeons of the country as to the general utility and safety of this drug in surgical practice.

We may say in the beginning that while the advantages of the drug both before and after operation are obvious, the disadvantages are problematic; and it was with the purpose of determining whether these disadvantages really exist so far as kidney function is concerned that we began some experimental work which, while still incomplete, has yielded interesting results.

Since the results of functional kidney tests by the dye methods roughly parallel those by other methods or all methods combined, we employed indigocarmin intravenously, on account of its convenience, in both our human and our animal experiments, and we claim no more for the accuracy of our work than is generally conceded for this dye as a test of kidney function. We initiated our experiments on ambulant office and dispensary cases, chosen at random, by injecting 5 c.c. of 0.4 per cent. indigocarmin solution intravenously, and then collected the urine at twenty minute intervals for three periods. The appearance time of the dye was noted, and the percentage excreted was estimated separately for each period. The "index of elimination" was then calculated by dividing the percentage of the first

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1. Slocum, M. A.: Morphin: Its Use Before and After Operations, J. A. M. A. 84: 1264 (April 25) 1925.

period by that of the third. This index has proved a reliable criterion in determining the operability of pathologic cases.[2] As soon as possible after the first experiment, we gave each patient one-fourth grain (16 mg.) of morphin sulphate and 1/150 grain (0.4 mg.) of atropin sulphate hypodermically. One half hour after the hypodermic injection, the dye test was repeated as just described.

TABLE 1.—*Functional Kidney Tests With Indigocarmin Intravenously, With and Without Morphin Sulphate and Atropin Sulphate Hypodermically One-half Hour Before Each Test*

| Case | Date | Hypodermic | Approximate Time, Minutes | Twenty Minute Periods 1 | 2 | 3 | Total | Index |
|---|---|---|---|---|---|---|---|---|
| 1 | 2/ 3 | None | 4½ | 18.5 | 9 | 2.5 | 30 | 7 |
| | 1/29 | Given | 5½ | 14 | 7 | 2 | 23 | 7 |
| 2 | 2/ 4 | None | 3½ | 27.7 | 7 | 2 | 36.7 | 13 |
| | 2/ 6 | Given | 3 | 29.4 | 4.5 | 0.75 | 34.6 | 39 |
| 3 | 3/ 5 | None | 5½ | 18.5 | 7 | 2.1 | 27.6 | 9 |
| | 3/12 | Given | 5½ | 19 | 8 | 1.5 | 28.5 | 12 |
| 4 | 3/11 | None | 4 | 17 | 8 | 1.5 | 26.5 | 11 |
| | 3/27 | Given | 4 | 25 | 5 | 1 | 31 | 25 |
| 5 | 3/12 | None | 6 | 15 | 7 | 2 | 24 | 7 |
| | 3/15 | Given | 6 | 14.5 | 8 | 2.5 | 25 | 6 |
| 6 | 4/25 | None | 6 | 11.7 | 6.4 | 2.25 | 20.3 | 5 |
| | 5/ 7 | Given | 5 | 16 | 9 | 2.5 | 27.5 | 6.4 |

Table 1 shows the results of these tests in a few typical cases. It will be noted that elimination was, on the average, slightly better after the injection of morphin and atropin, as shown by the appearance time and the total percentage of dye eliminated, and decidedly better according to the index of elimination. These tests were made without any control of fluid intake, but no water was given just before starting the tests. Morphin and atropin were used instead of morphin alone, since this combination is usually employed; and the results are to be interpreted as the effect of the combination.

Another series of tests were made in which phenolsulphonephthalein was used instead of indigocarmin, and the results were not materially different from those of the first series. Kidney function varies considerably from day to day, although the tests may be made, so far as can be arranged, under identical conditions; but the results obtained with these subjects seem sufficiently constant to justify the conclusion that morphin and atropin combined accelerate kidney function slightly, as measured by the dye tests in normal ambulant cases. We may at least conclude that renal secretion is not lessened by the administration of these drugs.

Our experiments on animals were made to determine the effect of morphin and atropin on kidney function, when injected as an adjuvant prior to ether anesthesia.

Indigocarmin, when injected intravenously into normal dogs, appears in the urine usually in from three to five minutes. We had noticed in some earlier experimental work that if indigocarmin was injected into a dog which had previously been subjected to unilateral kidney denervation, the dye appeared in the bladder from one-half to one and one-half minutes earlier from the denervated side than from the normal kidney. If the same dog was subjected to ether anesthesia and the dye then injected, it would appear in normal time from the denervated side but would be considerably delayed on the normal side.

We found that if a normal dog was anesthetized and the indigocarmin was injected immediately, its appearance would be somewhat delayed. If the anesthetic was continued a few minutes before injecting the dye, its appearance was still more delayed. When a dog has been subjected to surgical anesthesia for thirty minutes and indigocarmin solution is then injected, there is such inhibition of kidney function that the dye does not appear in the urine as long as the anesthetic is continued. We have found only one exception to this rule in all our experiments.

There are in the surgical research laboratory of the University of Pennsylvania Graduate School of Medicine six dogs in which both kidneys had been denervated for experimental purposes from nine to twelve months ago.[3] These dogs were all given ether for thirty minutes and indigocarmin was then injected intravenously. In five, the dye appeared in less than five minutes although the ether was continued. These facts influenced us in the manner of conducting the experiments, the results of which are presented in Table 2, and caused us to anticipate somewhat accurately the results that would follow the administration of morphin and atropin prior to ether anesthesia.

These dogs were all subjected to deep ether anesthesia for thirty minutes. Indigocarmin was then injected and the anesthetic was continued. In each case the dye did not appear in the urine within twenty minutes, nor until a variable time after the ether was stopped. A glass catheter was kept in the bladder, which was flushed at short intervals so that the appearance of any dye might be noticed at once. About a week after the first experiment, each dog was given a light dose of morphin and atropin by hypodermic injection. One-half hour later ether was started, and the dog was kept under very profound anesthesia for thirty minutes. We killed several dogs at this stage by giving too much ether, for we wanted to be sure that as much anesthetic was given during the second experiment as during the first. At the end of the thirty minute period of anesthesia, indigocarmin was injected intravenously, and in every instance, as seen by the table, the dye appeared about as soon as would have been the case had the dog not been under an anesthetic. We did have one dog in which the dye failed to appear early as expected, and this dog died of distemper before we were able to repeat the experiment with a larger dose of the narcotic.

A third test was done on Dog 4 in which morphin alone was used and in which the dye appeared about as

TABLE 2.—*Intravenous Indigocarmin Tests in Dogs With Normal Kidneys*

| Dog | Date | Hypodermic of Morphin Sulphate and Atropin ½ Hour Before Ether | Ether, Minutes | Indigocarmin Solution Intravenously, C.c. | Ether Continued, Minutes | Appearance Time, Minutes |
|---|---|---|---|---|---|---|
| 1 | 3/30 | None | 30 | 2 | 26 | 32 |
| | 4/20 | 1/8 and 1/300 | 30 | 2 | 5 | 5 |
| 2 | 3/10 | None | 30 | 2 | 22 | 32 |
| | 3/26 | 1/16 and 1/600 | 30 | 2 | 4 | 4 |
| 3 | 4/ 9 | None | 30 | 2 | 30 | 34 |
| | 4/16 | 1/16 and 1/600 | 30 | 2 | 4 | 4 |
| 4 | 4/30 | None | 30 | 2.5 | 20 | 42 |
| | 5/ 7 | 1/8 and 1/300 | 30 | 2.5 | 4½ | 4½ |
| | 5/14 | 1/8 M. S. | 30 | 2.5 | 5 | 5 |
| 5 | 5/14 | None | 30 | 2 | 30 | 30 |
| | 5/18 | 1/8 and 1/300 | 30 | 2 | 3½ | 3½ |
| 6 | 5/15 | 1/300 atropin | 30 | 2.5 | 20 | 28 |
| | 5/19 | 1/8 and 1/300 | 30 | 2.5 | 4 | 4 |

2. Thomas, B. A., and Birdsall, J. C.: Kidney Tests, J. A. M. A. 69: 1747 (Nov. 24) 1917.

3. Milliken, L. F., and Karr, W. G.: J. Urol. 13: (Jan.) 1925.

soon as when morphin and atropin combined were used. Dog 6 received 1/300 grain (0.2 gm.) of atropin alone before ether was given, but this did not prevent the ether inhibition of function.

It appears, therefore, that a sufficient dose of morphin and atropin, given thirty minutes before ether anesthesia, prevents the usual ether inhibition of kidney function in dogs, so far as this may be determined by the indigocarmin test. If the action of these drugs is similar in man, then we have a very positive indication for their use as an adjuvant to ether anesthesia, especially in urologic surgery.

Obviously, it is not often possible to conduct these experiments in the same way in surgical cases, but we do know that ether inhibits the elimination of indigocarmin in man in exactly the same way as it does in dogs. One patient who had normal elimination of the dye before operation was given indigocarmin intravenously after thirty minutes of ether anesthesia, and the dye did not appear until the ether was discontinued more than an hour later. It has also been noticed that when morphin and atropin are given preliminary to etherization for the purpose of cystoscopy, the dye given intravenously appears in normal time.

More detailed and accurate observation is necessary to substantiate the idea that these two drugs influence renal secretion the same way in man as in experimental animals; but if this theory is confirmed, then we have another indication for their employment when it is necessary to determine unilateral kidney function by cystoscopic observation in an anesthetized case.

In experimental animals, the use of morphin and atropin before ether anesthesia seems to influence kidney function temporarily in the same way as denervation of the kidneys. If this is true, we might reasonably expect these drugs to prevent reflex anuria following urologic operations, or at least that their use might lessen the incidence of this complication.

It is not within the scope of this paper to discuss the physiologic considerations which these experiments suggest, but it is believed that a correct interpretation of the facts produced will throw interesting sidelights on the physiology of urinary secretion.

### CONCLUSIONS

1. Morphin and atropin, in the usual hypodermic dose, do not affect kidney function unfavorably.
2. Ether anesthesia inhibits kidney function in dogs, and morphin and atropin given prior to the anesthetic prevent this inhibition.
3. Clinical observation and experimentation indicate that morphin and atropin have the same effect on kidney function in man during ether anesthesia that they have in experimental animals.
4. Our experiments suggest definite indications for the use of morphin and atropin in urologic surgery in addition to those already recognized.
5. Further research and more definite clinical observation of the effect of morphin and atropin on kidney function are desirable.

**Ramon Flocculation Test on Scarlet Fever Toxin and Antitoxin.**—The Ramon flocculation test has been applied to the toxin and antitoxin of a hemolytic streptococcus of scarlatinal origin and has given a definite reading which checks on repeated tests. Comparison of results obtained by the flocculation method of titration and those obtained by skin tests are now being made.—Dyer, R. E.: *Pub. Health Rep.* **40**:865 (May 1) 1925.

# THE PRESENT STATUS OF HEXYLRESORCINOL AS AN INTERNAL URINARY DISINFECTANT*

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Chiefly as the result of the comprehensive researches of Dr. Edwin Davis,[1] in Dr. Hugh Young's urologic clinic at the Johns Hopkins Hospital, the chemical and biologic properties essential to an effective internal urinary antiseptic were known and clearly stated long before any substance possessing these properties had been described. According to Davis, the ideal internal urinary antiseptic should be: (1) chemically stable; (2) nontoxic; (3) nonirritating to the urinary tract; (4) antiseptic in high dilution in urine of any reaction, and (5) eliminated in high percentage by the kidney.

Having examined the possibilities in more than 400 compounds, many of which had been especially synthesized for the purpose of internal urinary antisepsis by Dr. E. C. White of Baltimore, Davis [2] felt justified, only four years ago, in stating that "there is no sound experimental or clinical proof of the fitness of any known drug for use as an internal urinary antiseptic."

The investigations that have led recently to the development of hexylresorcinol and its application as an internal urinary antiseptic were begun some twelve years ago. At that time one of us examined the lower homologues of this series of alkyl resorcinols [3] as to their biologic behavior, and found them not only to possess a very high degree of bactericidal power, but also to be relatively nontoxic substances. The examination of propylresorcinol, which appeared in the urine quite promptly after oral administration to rabbits, and a comparison of its biologic properties with those of resorcinol led to the hypothesis that alkylation of resorcinol not only increases its bactericidal power, but also decreases its toxicity, in direct proportion to the sum of the atomic weights of the atoms in the alkyl chain. Application of this idea, however, to practically every available phenolic nucleus other than resorcinol, with the object of developing a very powerful germicide of minimum toxicity, has led to indifferent or negative results.

In the resorcinol series, however, each increase in the weight of the alkyl chain was found to result in an astonishing development of bactericidal power with at least no apparent increase in toxicity when administered to rabbits by stomach tube. The peak of bactericidal power was reached in hexylresorcinol with a phenol coefficient variously estimated at from 46 to 56.3 by the United States Hygienic Laboratory method [4] now in use. Although hexylresorcinol is the

* From the Department of Bacteriology of the School of Hygiene and Public Health, Johns Hopkins University.

* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL by omission of tabulated case reports. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Davis, Edwin: Urinary Antisepsis, J. A. M. A. **70**: 581 (March) 1918. Davis, Edwin; and White, E. C.: J. Urol. **2**: 107 (April) 1918. Davis, Edwin; White, E. C., and Rosen, R.: Ibid. **2**: 277 (Aug.) 1918. Davis, Edwin: Ibid. **2**: 299 (Aug.) 1918; Am. J. M. Sc. **161**: 251 (Feb.) 1921. Davis, Edwin; and Beck, G. H.: J. Urol. **5**: 215 (March) 1921.

2. Davis and Beck (Footnote 1, sixth reference).

3. Johnson and Hodge: J. Am. Chem. Soc. **35**: 529, 1913. Johnson and Lane: Ibid. **43**: 348, 1921.

4. Pub. Health Rep., July 8, 1921. McClintic: Bull 82, Hyg. Lab., U. S. P. H. S., April, 1912, p. 35.

most powerful phenolic germicide ever described,[5] daily administration by mouth of doses of 0.5 gm. to rabbits for twenty-one consecutive days, and single doses as large as 2.5 gm. (1 gm. per kilogram), resulted in no immediate or remote toxic effects that could be detected either by renal function tests, and urine and blood examinations during the period of observation, or later by microscopic examination of stained sections of all the more important organs. In fact, most of the animals saved for late observation, after prolonged courses of hexylresorcinol, showed remarkable gains in weight.

The details of the experimental work with hexylresorcinol in the test tube, in rabbits and in normal men, have been published elsewhere[5] and will not be repeated. Suffice it to say that by a technic closely similar to that employed by Davis, oral administration of hexylresorcinol to normal men in repeated doses of 0.6 gm. was found to result in the secretion of a practically continuous flow of bactericidal urine, which in the test tube was found to be capable of destroying strains of *Bacillus coli*, as well as *Staphylococcus albus* and *aureus* isolated from cases of active pyelitis. In both rabbits and normal men, hexylresorcinol was found to answer Davis' qualifications for an internal urinary antiseptic in the following manner:

Hexylresorcinol was found to be: (1) chemically stable; (2) nontoxic in highly effective doses; (3) nonirritating to the urinary tract; (4) bactericidal (not merely antiseptic or bacteriostatic) in high dilution in urine of any reaction, and (5) eliminated in high percentage by the kidney, largely as an inert conjugate, but unchanged in sufficient amount to impart definite bactericidal properties to the urine. Hexylresorcinol is the only substance ever described as possessing these requirements.

Various methods of administration of hexylresorcinol have been carefully compared in the laboratory and in clinical use since the last published account of this work.[6] It has been found that the expectancy of bactericidal urine in normal men is definitely higher on equivalent doses of hexylresorcinol in solution in olive oil than with any other form investigated. If given immediately after meals or with a glass of rich milk, a 25 per cent. solution is well borne by all but very exceptional patients.

As a matter of convenience we have recommended that this solution be enclosed in a soluble gelatin capsule containing 0.15 gm. of the drug. For administration to infants and children, a 2.5 per cent. solution of hexylresorcinol in olive oil (1 dram [4 c.c.] contains 0.1 gm. of hexylresorcinol) has been found to be very satisfactory, and may be administered without any relation to meals.

### MECHANISM OF THE INTERFERING ACTION OF SODIUM BICARBONATE

As previously pointed out,[5] the administration of soda to persons receiving hexylresorcinol completely robs the urine of its bactericidal properties, but for the reason that hexylresorcinol is just as active in alkaline as in acid urine, both in vitro and in vivo, this could not be due to the alkalinity of the urine per se.

The explanation of this puzzling situation has now been determined, and will be reported in detail elsewhere.[7] A brief account of the experimental proof will be given, however, for the reason that the results indicate the desirability of a change in certain routine procedures frequently instituted in the treatment of chronic infections of the urinary tract.

Billard[8] has shown that by lowering the surface tension of a solution of sugar, the rate of diffusion of water through the semipermeable membrane containing it is greatly increased. Since disinfection by direct chemical means must necessarily be preceded by the diffusion of the germicide through the cell membrane of the organism, it is reasonable to suppose that any factor controlling the rate or extent of that diffusion would equally control the rate or extent of the disinfection.

Applying this idea to disinfection in the test tube, we have shown that certain high dilutions of hexylresorcinol which are too weak to destroy the organisms exposed to their action become quickly effective when the surface tension of the solution is reduced by means of some substance that is entirely devoid of bactericidal action.

It is apparent, therefore, that a germicide which itself lowers the surface tension of its solutions possesses great advantages over one which does not.

Hexylresorcinol is a very powerful surface tension reducent. It seems highly probable that its remarkable bactericidal power is largely dependent on this physical property.

With these facts in mind it became highly desirable to determine the average surface tension of normal urine and then to study the effects of various drugs on it, especially hexylresorcinol and sodium bicarbonate.

For this purpose the surface tensiometer of du Noüy[9] was employed. The results were as follows:

The surface tension of normal urine is in the neighborhood of 60 dynes per centimeter.[10]

Administration of hexylresorcinol to normal men in therapeutic doses reduces the surface tension of the urine to the neighborhood of 50 dynes per centimeter.

Administration of sodium bicarbonate to normal men in therapeutic doses raises the surface tension of the urine to the neighborhood of 66 dynes per centimeter and above.

Merely by forcing water, the surface tension of the urine of a normal man may readily be raised by from 15 to 20 dynes per centimeter.

These figures are very significant. In the test tube, surface tension changes of this magnitude may be shown to control the bactericidal activity of a wide range of dilutions.

In the experiments on normal men receiving hexylresorcinol, the urine specimens showing a surface tension in the neighborhood of 50 dynes per centimeter or below were almost invariably bactericidal, even after titration to alkalinity, while those showing a surface tension around 66 dynes per centimeter or above, following the administration of soda or quantities of water, were almost invariably inert.

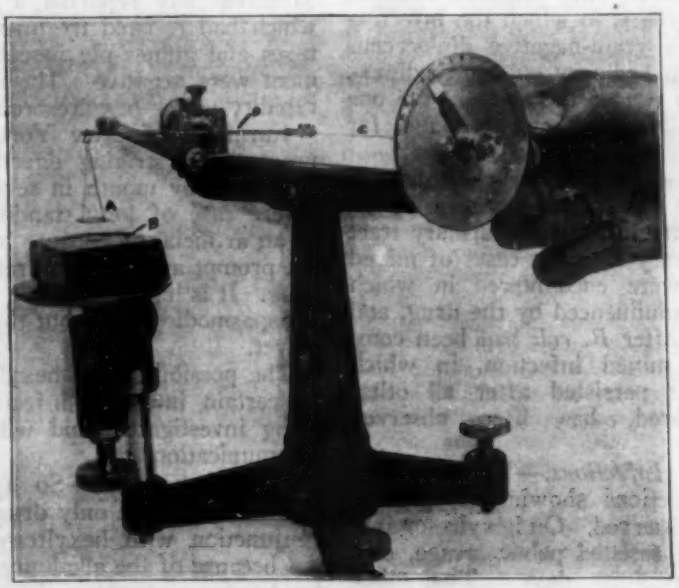
The direct bearing of these observations on the treatment of chronic infections of the urinary tract is obvious. While alkalization of the urine and "forced fluids" are of unquestioned value in the treatment of acute infections of the urinary tract, yet these measures alone are commonly observed to be of no avail in the chronic infections. In the latter, the use of active local and internal antiseptic therapy is generally considered

5. Leonard, Veader: Secretion of Bactericidal Urine and Disinfection of Urinary Tract Following Oral Administration of Certain Alkyl Derivatives of Resorcinol, J. A. M. A. **83**: 2005 (Dec. 20) 1924; J. Urol. **12**: 585 (Dec.) 1924.
6. Leonard (Footnote 5, second reference).
7. Leonard and Frobisher: J. Urol., to be published.
8. Billard, G.: Compt. rend. Soc. de biol. **60**: 1906.
9. Du Noüy, P. L.: J. General Physiol. **1**: 521 (May) 1919.
10. One dyne is equivalent to a lifting force of 1/981 gm. The surface tension of pure water is 77 dynes per centimeter.

to be essential. Yet forcing water, in addition to the antiseptic therapy, is almost a routine practice, while alkalization is frequently employed, as well. Both measures defeat the object of chemical disinfection of the urinary tract,[11] not only by diluting the antiseptic in the urine, but also by rendering even that dilution less efficient than it would be ordinarily, through the resulting rise in the surface tension of the urine.

Soda was known to be contraindicated in conjunction with hexylresorcinol treatment long before the explanation of its action was understood, but the importance of avoiding forced fluids became apparent only when the mechanism of the interfering action of soda had been determined.

In this connection it is interesting to note that, among the urologists who have been employing hexylresorcinol clinically for several months, the least enthusiastic reports seem to come chiefly from those who invariably instruct their patients to drink quantities of water.



The du Noüy surface tensiometer: The platinum loop (*A*) is brought in contact with the surface of the fluid (*B*) to be tested. The pull of the fluid surface is then measured by exerting a torsion on the fine steel wire (*C*) to which the loop is attached by means of the aluminum rod (*D*). The amount of torsion, or pull, is registered on the dial in angular degrees of torsion (<°t) and this reading is converted to dynes per centimeter by the use of a factor which varies with the individual tensiometer.

### CLINICAL RESULTS

Hexylresorcinol has now been administered in upward of 500 cases properly controlled by bacteriologic and urologic study. Three facts stand out in an analysis of this material.

1. Hexylresorcinol is nontoxic in therapeutic doses. The preliminary catharsis which frequently characterized the earlier forms of administration is a negligible factor with olive oil solutions in capsules as now employed. The dose should be given immediately after meals. Those who have reported gastric intolerance have been found almost invariably to have neglected this point. Children seem to tolerate relatively larger doses than adults. In the more massive doses (1 gm. three or four times a day), which are probably never necessary, griping frequently results. An occasional patient will complain of griping sensations on small doses. This is usually only temporary, but may sometimes necessitate withdrawal of the drug.

2. Hexylresorcinol has not infrequently accomplished complete disinfection of the urinary tract in cases of long standing infections which have resisted all other measures.

3. Hexylresorcinol by mouth, without other treatment, has frequently resulted in the complete disappearance of all the commoner types of organisms found in urinary tract infections, as well as many of the rarer varieties.

*Chronic B. Coli Infections (Adults).*—Cases of this type which form the bulk of urologic infections may clear up completely in some instances with considerable rapidity under hexylresorcinol treatment (Table 1). Not infrequently the kidney pelves are completely disinfected while the bladder urine is still teeming with organisms (Table 2), and, under these circumstances, bladder irrigations may complete the disinfection very promptly. There is usually a very striking subsidence of local and constitutional symptoms, even though there may be no reduction in the number of organisms in the urine (Table 3).

Complete disinfection of the urinary tract in the *B. coli* infections ordinarily requires very persistent treatment, from sixty to ninety days, and the use of renal lavage and bladder irrigations in conjunction with the drug will increase the percentage of permanent cures and shorten the course of treatment.

It is commonly observed that the long standing *B. coli* infections associated with prostatitis are among the most resistant of these cases. The infections which persist after removal of the prostate seem to be almost as difficult to cure. On the other hand, *B. coli* cystitis following prostatectomy ordinarily clears up promptly and satisfactorily under hexylresorcinol, provided there has not been a long standing infection previous to operation.

Forcing water, insufficient dosage and too short courses of the drug are the most frequent causes of disappointing results in the treatment of these cases with hexylresorcinol. As shown by Dr. R. B. Henline[12] in Dr. Oswald S. Lowsley's clinic at the New York Hospital, the percentage of cures in chronic *B. coli* infections of the urinary tract is very high if treatment with hexylresorcinol is persistent and accompanies the usual local measures.

*Chronic B. Coli Pyelitis (Children).*—As shown in Table 4, the chronic pyelitis of infancy and childhood may yield quite readily to hexylresorcinol. Symptomatic improvement is ordinarily very prompt and striking, and complete disinfection is obtainable in the majority of instances in a shorter time than in adults. Two cases cleared up in seven days.

In the very acute stages, hydrotherapy is necessary to check the violent febrile attacks, and under these circumstances, as in the acute pyelitis of pregnancy, forced fluids and alkalization give better results than any other form of treatment. Hexylresorcinol should be reserved for the subacute and chronic stages in this group of cases.

A 2.5 per cent. solution of hexylresorcinol in olive oil has been found to be a satisfactory form of administration to infants.

*Staphylococcus Infections.*—The most spectacular cures attributable to hexylresorcinol treatment are found in this group of chronic urinary tract infections (Tables 5 and 6). *Staphylococcus albus* and *aureus*

11. Acriflavine and proflavine require an alkaline reaction.

12. Henline, R. B.: Hexylresorcinol in the Treatment of Fifty Cases of Infection of the Urinary Tract, J. Urol. **14**: 119 (Aug.) 1925.

have disappeared completely and permanently in some of these cases within forty-eight hours. The average time necessary for complete disinfection appears to be in the neighborhood of three weeks. Prompt cure has followed the use of the drug in chronic pyelitis cases which have resisted hexamethylenamin by mouth and intravenously, gentian violet and repeated doses of mercurochrome-220 soluble intravenously, and renal lavage with silver nitrate and mercurochrome.

Not infrequently small numbers of organisms may persist in the urine long after clinical cure is complete. This is especially common if there is a complicating prostatitis. Each case should be carefully checked by culture from time to time, and the drug continued until the urine has been sterile for at least two weeks.

*Other Coccus Infections.*—The few cases which have shown streptococci in pure culture in the urine (Table 7) have responded very promptly to hexylresorcinol treatment. Prompt cure has also resulted in two cases of chronic pyelitis in which the infecting agent was found to be a gram-negative diplococcus which grew luxuriantly on ordinary culture mediums. Prompt cure followed the use of the drug in the one case of gonorrheal pyelitis and cystitis thus far recorded.

*Fluorescent Organisms.*—Early in the clinical work with hexylresorcinol the rapid disappearance of *B. pyocyaneus* from mixed infections of the urinary tract was noted.[13] Later, two very resistant cases of mixed infections with *B. coli* were encountered in which *B. pyocyaneus* persisted uninfluenced by the drug, and remained in pure culture after *B. coli* had been completely eradicated. One mixed infection, in which *B. fluorescens-liquefaciens* persisted after all other organisms had disappeared, has been observed (B. E. V., Table 3).

*Miscellaneous Bacillary Infections.*—Two cases of chronic urinary tract infections showing *B. proteus* in pure culture have been observed. On hexylresorcinol one of these,[14] which had resisted pelvic lavage, etc., cleared up completely in four days. The other cleared up in sixteen days. In one case of mixed infection with *B. coli, B. proteus* disappeared on the thirteenth day.

One case of chronic pyelitis and cystitis due to *B. subtilis,* which had resisted pelvic lavage, bladder irrigations, etc., was cured on the twenty-fourth day of hexylresorcinol treatment.[15]

*Disinfection of Wounds Draining the Urinary Tract.*—The observation has been made by Dr. H. H. Young[16] and others that the virulent infections of prostatectomy wounds, recently reported by Shaw and Hill[17] as due to a gram-positive bacillus, hitherto undescribed, may clear up in a very striking manner when hexylresorcinol is given by mouth. The results were not entirely conclusive, as local treatment was used as well.

In this connection, the recent observations of D. C. Elliott and H. G. Barbour are of interest. They say:

> Two days prior to, and daily following urological operations, a series of twenty cases was given 0.9 gm. of hexylresorcinol. With urine draining through suprapubic and external urethrotomy wounds and soaking dressings, granulation tissue was healthy and normal; and though a few *B. coli* were cultured from the urine, no further evidence of infection was observed. Hexylresorcinol was easily detected in these urines. . . . Suprapubic and other wounds from urological operations remain clean in spite of contaminated urine after prophylactic oral doses of hexylresorcinol.

*Tuberculosis of the Urinary Tract.*—Hexylresorcinol will clear up the secondary infection so frequently found in tuberculosis of the urinary tract with apparently the same degree of expectancy as in the nontuberculous urinary infections. There is this difference, however: The secondary infection will recur sooner or later unless the patient continues to take the drug. Doses of 0.45 gm. thrice daily are ordinarily sufficient to prevent reinfection.

No direct influence on the tuberculous process itself has been observed in these cases. Many of the patients gain weight while under treatment with hexylresorcinol, but the same is true of normal men.

*Miscellaneous Clinical Observations.*—Powell[16] of Montreal has reported a case of persistent pyuria which had resisted treatment for years. Smears, cultures and guinea-pig inoculations of the urinary sediment were negative. The urine cleared up with great rapidity under hexylresorcinol.

Furniss[18] of New York has observed some very prompt and striking effects from the use of hexylresorcinol by mouth in severe dysmenorrhea. In one severe case of long standing, in which the induction of an artificial menopause by radium had been decided on, prompt and complete relief followed the use of the drug. It is highly probable that hexylresorcinol has an antispasmodic action, but this has not been investigated as yet.

The possibilities of hexylresorcinol in the treatment of certain intestinal infections, including colitis, are being investigated, and will be reported in a future communication.

*Contraindications.*—So far as is known, sodium bicarbonate is the only drug that is contraindicated in conjunction with hexylresorcinol treatment. This is not because of the alkalinity of the urine which results, but because soda raises the surface tension of the urine. Forcing fluids has the same effect, and is therefore contraindicated as well.

So far as is known, nephritis is not a contraindication. On the contrary, some nephritic patients seem to have been benefited by hexylresorcinol as evidenced by diminished albuminuria and pyuria and the disappearance of edema while under treatment with the drug.

No irritant effect on the kidney can be demonstrated by daily administration of massive doses to rabbits for weeks at a time, or by repeated daily administration of therapeutic doses to normal men for months at a time. Daily chemical and microscopic examination of the urine during the course of administration, and occasionally for six months thereafter, never revealed the slightest abnormality in any instance, while the phenolsulphonephthalein output remained unimpaired.

## GENERAL CONCLUSION

Urinary infection is no more a clinical entity than hematuria or pyuria. It is merely a warning signal demanding thorough investigation by the trained urologist. No internal urinary antiseptic, however ideal, can be used intelligently without a thorough knowledge of the underlying pathologic condition responsible for the urinary infection. A functioning kidney is the first

13. Leonard (Footnote 5, first reference).
14. McCurry, W. E.: Hexylresorcinol in Bacillus Proteus Pyelitis, abstr. J. A. M. A. **84**: 1950 (June 20) 1925.
15. Jacobs, L. K.: Personal communication to the authors.
16. Personal communication to the authors.
17. Shaw, E. C., and Hill, J. H.: J. Urol. **13**: 689 (June) 1925.
18. Furniss, H. D., in discussion on Henline, R. B.: Hexylresorcinol in the Treatment of Fifty Cases of Infection of the Urinary Tract, New York Academy of Medicine, April 22, 1925.

necessity. Foci of infection, which may be a constant source of reinfection of the urinary tract, must be searched out and dealt with. Defective drainage at any point in the urinary canal must be corrected by appropriate measures, for even though it is possible to disinfect the urinary tract completely by means of hexylresorcinol in certain instances, even in the presence of these obstructions, to leave the patient with urinary stasis is to invite reinfection. The fact needs no emphasis, however, that after removal of all discoverable foci and after full correction of all defects in urinary drainage, a large proportion of chronic urinary infections persist in spite of the most thorough application of all of the measures heretofore at our command. On the basis of our clinical experiences with hexylresorcinol during the last eighteen months, it seems reasonable to expect that this drug will find its greatest field of usefulness in this group, regardless of the infecting agent.

Even with these considerations in mind, the best results will follow only the strict observance of four controlling factors in the use of hexylresorcinol, all of which bear a close relationship to considerations of surface tension:

1. The dosage must be adequate. On less than from 0.45 to 0.6 gm. three times a day (from three to four capsules immediately after each meal), the surface tension of the urine will not be lowered sufficiently to obtain the maximum disinfectant action.

2. Fluids must not be forced. This procedure raises the surface tension of the urine, and thereby robs it of its bactericidal action. In many instances, quantities of water may be a prime necessity. Under these circumstances it is just as well to postpone active antiseptic therapy until the amount of fluid ingested can be safely reduced.

3. Sodium bicarbonate is contraindicated for the reason that it raises the surface tension of the urine, and, like large quantities of water, thereby robs the urine of its bactericidal properties. Hexylresorcinol is equally efficacious in alkaline and in acid urine.

4. The course of treatment with hexylresorcinol must be sufficiently prolonged. Among the organisms commonly found in urinary tract infections, those which are most resistant to surface tension changes in the test tube (colon group) are most resistant to the action of hexylresorcinol in vivo. Urinary infections by *B. coli* and related types ordinarily require from sixty to ninety days' continuous treatment with the drug. If combined with the usual local measures, the course of treatment will be shortened and the percentage of ultimate cures increased.

817 Park Avenue.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. HAINES AND MILLIKEN, AND LEONARD AND WOOD

DR. O. S. LOWSLEY, New York: Dr. Haines brought up a really important problem as to dispelling some of the ideas we have inherited and have accepted without getting proper knowledge. It is interesting to know that morphin does not diminish the activity of the kidney, but increases it. That is very important in surgery. There is one thing that morphin does which is harmful: it causes a stasis of the intestinal tract. If some way could be found to relieve this, it would be a still more valuable drug than it now is. I should like to ask Dr. Haines whether the kidney catches up on its function after having been out of commission for thirty minutes. Is the function of the kidney without the ingestion of morphin the same at the end of two hours as it is with the morphin? Regarding hexylresorcinol: We were fortunate in being placed on Dr. Leonard's list of fifteen to receive that drug, and the result has been really spectacular. He was anxious to have every case a proved case, and we went further. Every patient had been treated with various other things. One had been treated for eighteen months, not constantly, but the disease was present at all times, and he often had exacerbations of acute pyelitis. In none of these cases have we failed to get a clinical cure. Dr. Henline of our staff will report those in which we have failed to get a bacteriologic cure. I remember one man who had three organisms in the kidney, *Staphylococcus aureus*, the colon bacillus and a color bacterium. He was having chills and fever two and three days a week. We did not wish to take his kidney out, as it functioned. We treated him by various methods to reduce the infection until he was able to continue his work, but he had occasional chills, and we made no impression whatever on the bacteriology of the urine. Three days after the hexylresorcinol was administered, *Staphylococcus aureus* was gone; the colon bacillus was gone in sixty days, and while he still has the color bacilli we do not worry about that. There is a slight amount of pus which is determined by the microscope, but there is no macroscopic pus. This drug, in spite of the embarrassing publicity it has had, is very valuable and unquestionably in our experience is far superior to any of the drugs we have ever used up to this time.

DR. R. B. HENLINE, New York: In our series of more than fifty-six cases of infection of the urinary tract, each patient had been subjected to a rigid physical examination, and all foci of infection had been removed. A complete cystoscopic examination was done in each case, including the taking of cultures from the bladder and each kidney, urea and microscopic examination of the urine from each kidney, an intravenous administration of phenolsulphonephthalein with the appearance time and quantitative estimation of the output from each kidney to determine the function, and plain roentgenograms and pyelograms in the dorsal and sitting posture. Each patient received an average of 0.45 gm. of hexylresorcinol three times daily, combined with ureteral dilations and kidney pelvic lavage at intervals of from one to four weeks. Seven patients noticed some gastric disturbance, but when the dose was given on a full stomach, all were able to tolerate it. No alarming symptoms were noted. Of twenty-six cases of colon bacillus infection, the average duration of the disease was 3.67 years. Fifty per cent. had some urinary complication. All these patients had been under treatment for an average of six months, receiving dilations of the ureter and kidney pelvic lavage with 1:1,000 neutral acriflavine. After hexylresorcinol, all the cultures of the urine, except two, became sterile in an average of 63.5 days. One of these patients showed sterile kidney specimens but failed to return for further treatment. The other has sterile kidney specimens but still has some infection of the bladder due to a coexisting bladder tumor. Of the twelve cases of other infections of the kidney and bladder, the average duration was two and one-half years. Seventy-five per cent. had some complications. After hexylresorcinol was begun, an average of 50.7 days was required to obtain sterile specimens from eleven cases. The remaining patient showed three organisms continually present in all specimens, two of them having disappeared leaving an encapsulated *Bacillus fluorescens*. He was clinically cured. Another patient had bilateral kidney stones. One stone was removed, and both kidney and bladder urines were sterilized, with the other stone remaining in the kidney pelvis. Of the fifteen cases of gonorrhea studied, none showed any improvement that could be attributed to the use of hexylresorcinol. Thus, our experience shows that hexylresorcinol, combined with the usual treatment, is of distinct aid in the treatment of urinary tract infections. In closing, I wish to stress the necessity of a thorough urologic examination and the removal of all pathologic conditions from the urinary tract.

DR. VINCENT J. O'CONOR, Chicago: In regard to the effect of morphin on kidney function: Several years ago I was asked to study the effect of morphin and scopolamin anesthesia on renal function. The results we obtained in twenty-five cases, very carefully checked with normal urinary func-

tion obtained by both the color and quantitative tests, showed that one-half grain (0.032 gm.) of morphin and 1/150 grain (0.0004 gm.) of scopolamin gave absolutely no change in the divided urine excretion as obtained by ureteral catheterization. This was irrespective of the amount of fluid given either before or during the tests. Studying cases in which one-fourth grain (0.016 gm.) of morphin and 1/100 or 1/50 grain (0.0006 or 0.001 gm.) of scopolamin was administered, followed an hour later by more morphin and scopolamin, showed a decreased appearance of the dye, and it appeared at first as though the function would be decreased; but when tests were taken over a period of two hours the total output during that time gave practically normal results. The patients who received three injections of morphin, one-fourth, one-sixth and one-sixth grain (0.016, 0.010 and 0.010 gm.), respectively, get different results. We studied ten of these cases and in every one there was decrease in the appearance of the dye and slight diminution in the function. This was shown to be due to the lack of fluid absorption during that time, because when fluid was given by rectum or subcutaneously the urinary excretion was normal. When glucose is given intravenously, there is a slight augmentation of normal function even when very large doses of morphin and scopolamin are given. It seemed from these observations that morphin had no direct action on kidney function, but that in large doses it hindered the absorption of fluids from the bowel, etc., and that this could be counterbalanced entirely by the administration of fluids.

DR. B. A. THOMAS, Philadelphia: I was very much interested in the report of Dr. Haines and Dr. Milliken with respect to the injection of morphin and atropin in conjunction with ether anesthesia, chiefly because about fifteen or eighteen years ago, in a small series of cases in which cystoscopy was performed and indigocarmin was used following morphin alone, we found that the dye was delayed in its elimination about four minutes, using the average injection of one-quarter grain (0.016 gm.) of morphin. In another small series in which cystoscopy was done before and after taking ether, making the comparison under the same circumstances, we found that following ether there was a delay in the elimination of indigocarmin of from five to ten minutes, depending on the duration of the anesthesia. Therefore, I feel that this work of Dr. Haines and Dr. Milliken possesses real value, because in those patients in whom the hypodermic prior to operation enjoys indisputable merit, fear for the inhibition of kidney function need be entertained no longer, since the addition of atropin to the morphin enhances rather than inhibits renal activity. Dr. Leonard is to be congratulated for the great amount of painstaking work he has done in connection with hexylresorcinol. I have been disappointed in its use in about twenty cases. The cases consisted of both unilateral and bilateral pyelitis, in which, in addition to colon bacilli, *B. proteus-vulgaris*, streptococci, staphylococci, and the bacillus of Friedländer were present. The work was done by Dr. John A. Kolmer in the Department of Bacteriology of the Graduate School of Medicine of the University of Pennsylvania. The results were not any more definite than we would expect to get from any urinary antiseptic. It is true that we did not carry out the treatment with the drug in these cases for the length of time I understand is necessary; that is, two or three months or more. Moreover, we gave the patients all the water they wanted. I understand that this should not have been done and that it interfered with the action of the drug. Perhaps we did not carry out the administration of hexylresorcinol satisfactorily, but we did it the best we knew how, according to the directions we had, and I feel that I would not dispense with the benefit of water in pyelitis for the sake of the medicinal action of hexylresorcinol. In our experience, about 50 per cent. of the patients could not tolerate the drug even in one-half the specified dosage.

DR. CLYDE W. COLLINGS, New York: Dr. Lowsley and Dr. Henline report approximately 100 per cent. cures, which seems almost too good. I wish Dr. Leonard would place Bellevue on his approved list for free hexylresorcinol.

DR. C. E. BUFORD, St. Louis: I have no detailed report for I have used hexylresorcinol in what I fear has been a rather unscientific way in about thirty cases. I am sure we made a mistake in that we did not limit the intake of fluids. Of the thirty patients, we felt that two were much improved. In two cases, hematuria was produced. Those patients were given two capsules, three times a day. In about six cases there was some complaint about the stomach not tolerating the drug, and the patients complained of belching, indigestion and so forth, but the work was not carried out with enough precision to count for much. I should like to know more about the instructions for giving it, for I am anxious to try it again and have our cases examined more carefully.

DR. ALEXANDER H. PEACOCK, Seattle: We have tried hexylresorcinol in a limited number of cases, but there are certain things against it: its cost and the long period of time over which it must be taken makes it prohibitive for many patients. The druggists have got hold of it, advertise it as a very efficient remedy and get exorbitant prices for it. In the very limited way in which we have used it, I do not think we have had any better results than from other urinary antiseptics, and it does cause irritation in a large percentage of the cases.

DR. DANIEL E. SHEA, Hartford, Conn.: One of my greatest objections to hexylresorcinol is its cost. Many of our clinic patients cannot afford it at its present price. I cannot say that I have seen any remarkable results after its use. One patient developed a severe hematuria after its use, while another patient complained of severe gastro-intestinal disturbances. I, also, have been prescribing plenty of fluids. If fluids are contraindicated while taking hexylresorcinol, I shall eliminate the drug and give the fluids. I feel that they are very necessary in the treatment of urologic conditions.

DR. LEON HERMAN, Philadelphia: In Dr. Leonard's original paper on hexylresorcinol, it is stated very definitely that the drug has proved most useful in the treatment of superficial infections of the urinary tract. In fact, attention is drawn to its inability to influence infections within the renal parenchyma, the prostate gland and other structures far removed from the lining mucosa of the urinary passages. If we eliminate this type of case, there are comparatively few cases in which hexylresorcinol would be of service, for uncomplicated surface infections of the mucous membrane are relatively uncommon. Many of the cases reported by Drs. Lowsley and Henline were instances of what in all probability were deep seated infections; notwithstanding this fact, the infection disappeared more or less promptly under treatment with hexylresorcinol. This is in direct contradiction to Dr. Leonard's original conception of the action of the drug. It is difficult to understand how one could eliminate infection from a kidney filled with stones; certainly it could not be accomplished by any means other than hexylresorcinol. Dr. Lowsley has shown several instances of this kind, and the conclusion would seem to be inevitable that hexylresorcinol will cure not only superficial infections but deep seated ones as well.

DR. LIONEL P. PLAYER, San Francisco: I have used hexylresorcinol to a very limited extent. I did not use it according to the dictates of Dr. Leonard. We forced fluids as usual, and I feel that had something to do with our failure to get results. When I get back I will try hexylresorcinol again. I should like to ask Dr. Leonard how long it is safe to give such a urinary antiseptic.

DR. ISRAEL KLEINER, New Haven, Conn.: My results with hexylresorcinol were about the same as those reported by Dr. Thomas. In no case did I see a favorable result. In all fairness to Dr. Leonard I want to say that in all the cases fluids were pushed while hexylresorcinol was being given. In our part of the country, the demand for the drug has been so great that the wholesale druggists cannot supply it. The patients taking it now are of necessity only getting it intermittently, although some are stocking up before starting the treatment.

DR. GEORGE GILBERT SMITH, Boston: I have used hexylresorcinol in about a dozen cases. Like some of the speakers, I feel that I have not followed instructions accurately, for I have not limited the intake of water. I have given the drug to some patients for two or three months, two capsules, three times a day, but this has not succeeded in clearing up the

entire urinary infection. I think Dr. Herman hit the nail on the head when he said that there are very few infections of the urinary tract that are confined to the mucous membrane, and it seems to me that when the infection is beneath the mucous membrane or in the prostate it is asking too much of any antiseptic to expect it thoroughly to sterilize the urinary tract. I think in those cases we must use desquamating doses of silver nitrate, or treat the prostate by massage, and get the infection out in that way. Dr. Leonard has done a great work in getting at the fundamental chemistry of urinary antisepsis, and I feel that on the basis of what he has discovered we are likely to get much better results than we have heretofore.

DR. O. S. LOWSLEY, New York: It might be worth while to explain that our bacteriology was all done by the bacteriologic department of the hospital, which is presided over by Dr. William Elser, professor of bacteriology at Cornell University. We place absolute confidence in the results. We have nothing to do with the examination, except to send the specimens. About the complications, we have eliminated them, even to the extent of taking out one bad kidney, and in case a patient has prostatitis, we treat the prostatitis in the usual way. We have also tried to eliminate all foci of infection in the teeth, tonsils and so on, realizing at the same time, and not mixing up the results, that after the elimination of bad teeth and bad tonsils, kidney infection will sometimes clear up by itself. Kidney bleeding will clear up after the elimination of the infection. The drug was recommended by one in whom we had the utmost confidence. Our results have been spectacular. We have tried to follow out his precepts to the letter, without any deviation. We have had patients with gastro-intestinal irritation and have taken those patients off the drug for a week, and then started again and have had no trouble after starting it the second time.

DR. LEON HERMAN, Philadelphia: It was far from my intention to question the results of Dr. Lowsley's work; these I accept as evidence that hexylresorcinol will accomplish far more than was claimed for it originally. Dr. Leonard has said repeatedly that this drug is not an "intrarenal" antiseptic; that it has little, if any, effect on deep seated infections of the urinary tract. It would seem from the results reported by Dr. Lowsley that Dr. Leonard was too modest in his claims for the antiseptic value of the drug. I should like to know if his original views have been modified as a result of the report submitted by Dr. Lowsley.

DR. L. F. MILLIKEN, Philadelphia: This work was by no means exhaustive, and while morphin and atropin combined seem to accelerate kidney function slightly, we do not advise their use as diuretics. We tried to determine in the first series of tests whether these drugs delay kidney function, as many believe that they do. There is one feature in connection with the tests to which I wish to call your attention. There was very little difference in the kidney function in the tests done with morphin and atropin and in those in which these drugs were not employed as determined by the appearance time of the dye and the total percentage eliminated, but according to the index of elimination, the excretion of dye was considerably accelerated after their administration. We did not recover a larger quantity of dye after the use of these drugs, but the kidneys did excrete it more promptly. Answering Dr. Lowsley's question about the kidneys catching up in their function: Ether inhibition of dye excretion is evident only when the animal is kept well under the anesthetic. If it is allowed to come out to the point of struggling, the dye almost immediately appears in the urine. In one case the dye appeared in twenty minutes during the first test. The anesthetic was neglected in this case, and when the dog began to struggle feebly the dye immediately appeared. No dye is excreted as long as the anesthetic is continued. In one hospital case, the anesthetic was continued for more than one hour after the dye was injected, and no dye appeared in the urine until eight minutes after the ether was withdrawn. In the dogs, function, as determined by the appearance time of the dye in the urine, was restored anywhere from six to twenty-two minutes after the ether was stopped. We had learned in some previous experiments that denervation of the kidneys prevented ether inhibition of function, and we began the second series of experiments to determine whether any drug would give similar results. We believe that we have in morphin and atropin drugs that do this.

DR. VEADER LEONARD, Baltimore: Recently Dr. Chute emphasized the point that it is better to have a live patient than one with a sterile urinary tract, and that water and lots of it is frequently a prime necessity. It is better to postpone the use of hexylresorcinol or any active antiseptic therapy until the necessity of forcing water no longer exists. Gastric irritation will seldom be experienced if hexylresorcinol is taken only immediately after meals. Rarely will a patient be found who cannot tolerate it. I have not personally observed hematuria. The drug has now been given to thousands of patients, and I am not prepared to admit that it was responsible in the two cases mentioned. Cause and effect have not been proved. Hematuria has not occurred in hundreds of observations on animals and normal men. Until very recently it seemed that hexylresorcinol would never be more than a laboratory curiosity because of its expense. It is bound to be expensive, at least until a new synthesis is devised which employs cheaper materials. Unfortunately, my limited supply has not been sufficient to meet the demands made on it. Hexylresorcinol is not contraindicated in pyelonephritis. We cannot expect prompt disinfection if the renal parenchyma is extensively involved, but in my experience these cases rarely fail to derive some benefit if treatment is persistent. Again, hexylresorcinol is not contraindicated in prostatitis, but no urinary antiseptic could possibly be expected to influence infection so located as to preclude intimate contact with the urine. Except in cases in which infection is confined to the mucosal surfaces, those who expect spectacular results without due regard to proper drainage and foci of infection will be disappointed. Not only must the drug be given in sufficient dosage and with avoidance of large quantities of fluid, but each case must receive the benefit of suitable treatment based on accurate urologic diagnosis.

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# PELLAGRA ASSOCIATED WITH ANNULAR CARCINOMA OF THE TERMINAL PORTION OF THE ILEUM *

FRANKLIN R. NUZUM, M.D.
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W. L. Bender has recently recorded three instances of carcinoma of the stomach associated with pellagra.[1] He could find in the literature only two similar reports. One, by Rolph,[2] recorded a woman with a skin eruption, glossitis, pharyngitis and mental symptoms considered typical of pellagra, coming on four months before death. At death, a carcinoma of the stomach was found. The carcinoma was located in the cardia and mechanically interfered with the passage of food into the stomach. The second, by Bryan,[3] concerned a patient with symptoms of peptic ulcer for twenty years who developed a dermatitis and stomatitis typical of pellagra. This patient had a carcinoma of the stomach, which was resected, and in two months the skin lesions had completely disappeared.

Three instances of acute pellagra following operations for suspected gastric ulcer are cited by Graves.[4]

Bender reports three instances. In one, a patient with a benign ulcer of the stomach developed pellagra during the period of jejunal feeding. The pellagra disappeared after the patient was placed on a general diet following gastro-enterostomy. The second patient had

* From the laboratories of the Santa Barbara Cottage Hospital.

1. Bender, W. L.: Pellagra Secondary to Lesions of the Stomach Interfering with Nutrition, J. A. M. A. 84: 1250 (April 25) 1925.
2. Rolph, F. W.: Cancer of the Stomach and Pellagra in the Same Patient, Canadian M. J. 6: 323, 1919.
3. Bryan, R. C.: Cancer of the Stomach Associated with Pellagra, Virginia M. Month. 46: 107 (Aug.) 1919.
4. Graves, M. L., in discussion on Roberts, S. R.: Types and Treatment of Pellagra, J. A. M. A. 75: 21 (July 5) 1920.

pellagra secondary to carcinoma of the stomach with pyloric obstruction. Some improvement followed gastro-enterostomy, but the patient died later. The third patient had pellagra associated with carcinoma of the stomach. Death followed operation in this instance. In each of these three instances, pellagra developed after the stomach lesion had caused obstruction to the passage of food.

I have observed two instances which are closely related to this subject. In each patient, well defined skin lesions were present, and a diagnosis of pellagra had been made by dermatologists. At death in each instance an annular carcinoma of the terminal portion of the ileum was found.

CASE 1.—*History.*—H. S., a white American, aged 58, entered the Santa Barbara Cottage Hospital in the service of Dr. H. O. Koefod, Sept. 7, 1922, complaining of weakness, anorexia, and of an eruption on his hands. He had had typhoid and pneumonia at 13 years of age, malaria at 48, and influenza at 53. He had lived in California all his life.

The present illness started seven months before admission to the hospital, when his nose began to bleed and small pimples were noted to form on the inside. Fainting spells began at this time, especially after exertion, together with shortness of breath, some cough and an expectoration which at times was bloody. Four months previous to admission, the patient noticed an eruption on the back of both hands. The appetite remained good until three weeks before admission. The bowels had been costive for many months and had required a daily dose of magnesium sulphate to obtain a movement.

Examination revealed a sharply demarcated dark red eruption on the back of each hand. Scattered over this area were thin, whitish scales. A similar eruption was found in a sharply demarcated area over the sacrum. On the anterior surface of each leg, there was a pigmented eruption similar in color to that on the hands. General nutrition was poor. The abdomen was distended. Purpuric spots appeared over both lower extremities. The patient was unable to eat, weakness increased rapidly, and he died twelve days after admission.

The laboratory data included a negative blood Wassermann test. Albumin and casts were present in the urine. Blood examination showed: hemoglobin, 30 per cent.; red blood cells, 2,000,000; white cells, 10,700; color index, 0.75; small lymphocytes, 30 per cent.; large lymphocytes, 7 per cent.; transitional cells, 2 per cent.; polymorphonuclear leukocytes, 59 per cent.; basophils, 2 per cent. The stools were repeatedly positive for chemical blood.

*Necropsy.*—There was a definite hard mass in the region of the ileocecal valve. There was a marked dilatation of the terminal portion of the ileum with a marked retention of fecal matter. The mass in this region was an annular carcinoma appearing in the last 10 cm. of the ileum and not involving the cecum Metastatses were present in the left lung, the hilum of the left lung, the liver and the spleen. The patient died of terminal bilateral bronchopneumonia. On section, the tumor of the bowel was found to be an adenocarcinoma.

CASE 2.—*History.*—A German, aged 68, whose family history was negative, had had measles, typhoid and malaria as a young man. He had had gonorrhea on three different occasions. He had been a laborer in mines for many years, but during the latter part of his life had been a tramp.

He entered the Santa Barbara General Hospital, May 1, 1923. He complained of a diarrhea of two months' duration, marked and rapid loss of weight, burning in the bowels, swollen tongue, cough, thirst, weakness and an eruption on the backs of both hands. This eruption had been present for two months.

The urine was normal. Blood examination revealed: hemoglobin, 90 per cent.; white blood cells, 4,200, of which 65 per cent. were polymorphonuclear leukocytes; small lymphocytes, 19 per cent.; large lymphocytes, 8 per cent.; transitionals, 1 per cent. The stools gave a positive chemical test for blood. The temperature was normal up to the last two days of the patient's illness. Death occurred seventeen days after admission.

The patient was emaciated and irrational. The mucous membrane of the mouth was red and edematous, and small ulcers were present. The tongue was swollen. The abdomen was distended. No masses or points of tenderness were found. Involving the back of each hand was a sharply demarcated area of dermatitis. The skin in the involved area was thickened and dull red. In the centers of these erythematous areas, desquamation was occurring. The scales were white and small.

*Necropsy.*—A tumor was found in the terminal portion of the ileum. There was marked distention of the bowel proximal to the tumor. The tumor was found to be an annular carcinoma involving the last 6 cm. of the ileum, but not extending into the cecum. Section revealed this tumor to be an adenocarcinoma. No metastases were found.

### COMMENT

The occurrence of lesions characteristic of pellagra associated with carcinoma of the small bowel has not been recorded, so far as I can determine. The suggestion of Bender that the disturbance of nutrition as a result of the mechanical obstruction caused by the carcinoma seems applicable to these two instances. The etiology of pellagra is still in doubt, one view contending that it is infectious and the other that it is a dietary deficiency lying in the protein content of the diet, as advocated by Goldberger.[5] Experimental data and results of treatment of pellagra patients make the dietetic theory the most plausible. These added instances of disturbance in nutrition as the result of mechanical obstruction of the small bowel give added weight to the dietetic origin of this disease.

Third Avenue and Bath Street.

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# OBSTETRIC PARALYSIS

## REPORT OF ELEVEN HUNDRED CASES *

JAMES WARREN SEVER, M.D.
BOSTON

The careful observation and stewardship of any large number of cases implies a certain responsibility to one's fellow workers. A report should be made of this stewardship so that they may profit by such an experience. I am therefore presenting a brief report of 1,100 cases of obstetric paralysis, in a large number of which I have been able to obtain fairly accurate data. These data will be presented because, by its numbers alone, it is the largest series of such cases ever recorded, and so far as that fact goes, must have a certain fundamental statistical value in establishing facts about this condition of obstetric paralysis.

The accompanying table shows in detail certain data in regard to these cases.

These figures alone, however, will not give one a complete picture of obstetric paralysis, as they record only the conditions occurring at birth, and serve only to suggest etiologic factors.

An analysis of the figures may be of interest. In the first place, there is no reason to expect any difference in regard to the sex.

The right arm was affected 670 times and the left, 430, or about 64 per cent. in favor of the right arm. This is about the usual percentage in other series reported.

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5. Goldberger, Joseph: The Relation of Diet to Pellagra, J. A. M. A. **78**: 167 (June 3) 1922.

* From the neurologic and orthopedic clinics of the Children's Hospital.
* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The types of paralysis differed, the most usual one being the so-called upper arm type, of which 829 cases were recorded, as against the so-called lower arm or, a better name, the whole arm type, in which besides the fifth and sixth cervical roots being injured, the seventh and eighth and first dorsal roots were injured. Of this type, 208 cases were recorded. In sixty-three cases both arms were affected, the whole arm type being the least common. It is generally acknowledged that a difficult and prolonged labor is a predisposing factor of the greatest importance in the causation of this type of paralysis. In this series, 584 cases were definitely recorded as long and difficult. In a large proportion of these cases, forceps were used, either high or low; most of the mothers had ether, which presupposes a relaxed and asphyxiated child. All these factors contribute toward establishing the ideal conditions for the production of such a paralysis.

All the conditions noted imply the application of force combined with great muscular relaxation of the child, conditions peculiarly favorable for the production of such an injury. A moderate number apparently had normal labor; that is, no forceps were used and no undue force was exerted. Others reported that the head was delivered naturally, but the shoulder stuck behind the pubes and at that time force was applied.

*Obstetric Paralysis in Eleven Hundred Cases*

| | |
|---|---|
| Boys | 551 |
| Girls | 549 |
| Right arm affected | 670 |
| Left arm affected | 430 |
| Both arms affected, upper arm type | 35 |
| Both arms affected, whole arm type | 22 |
| Both arms affected, type not recorded | 6 |
| Upper arm type | 829 |
| Whole arm type | 208 |
| Difficult labor | 584 |
| Ether used | 502 |
| Normal labor | 57 |
| Head presentation, including face | 443 |
| Breech presentation, including foot and version | 142 |
| Presentation not known | 458 |

In regard to the presentation, we have recorded 443 head or face presentations and 142 breech. The latter class includes versions and footlings. In 458 cases, the presentation could not be determined, but a large majority of these were undoubtedly vertex. The latter figures on the presentation are of interest as showing the much greater frequency of vertex presentations in relation to both types of paralysis. It has been supposed that breech presentations were the usual cause of the whole arm type of paralysis, but these figures refute such a theory. Also, it has been stated that paralysis occurred equally in head or breech presentations; but this is not so. Head presentations combined with a stuck shoulder, and the application of force at that time, resulting in a forcible separation of the head and shoulder, will injure the plexus to any degree, thus producing an upper or whole arm type of paralysis. There is, of course, an undue predominance of primiparas in this series. It must be granted that first babies make a harder entrance into this world than those that follow, and the paralytic conditions seem to exist more with them than with the later children, although these are not by any means exempt. There have been a noticeable number of babies that apparently showed a simple upper or whole arm paralysis at first, but a more careful examination showed various associated conditions due to cord injury. These cord injuries practically always follow breech extraction and are caused by traction and lateral flexion of the trunk. They show conditions from paralysis of both arms, partial or complete, due to injury to the plexus, to section of the cord and paraplegia below the point of injury. Many patients show a moderate degree of spasticity of the legs with adductor spasm suggesting a cortical lesion as well. They are of sufficient frequency not to be overlooked.

### PATHOLOGY

There are generally two well recognized types of paralysis seen. The more common, the upper arm type, consists of a lesion that involves the fifth and sixth cervical roots and the suprascapular nerve and produces a paralysis of the muscles of the upper arm only, with the exception of the supinators. The less usual type, the so-called lower arm, or whole arm type, is the result of injury not only to the fifth and sixth cervical roots, but to the seventh and eighth, and possibly the first thoracic as well. Here the whole arm is flaccid; there is a wrist-drop and paralysis of the small muscles of the hand. There occasionally occurs the pure lower arm type of paralysis without any involvement of the upper cords of the plexus, the so-called Klumpke's paralysis. These cases show a paralysis, usually the result of stretching of the plexus from overextension of the arm in cases of face presentation, and due to injury to the lower cords of the plexus; namely, the seventh and eighth cervical and first dorsal roots. They may at times be bilateral. It is in this type that one often sees inequality of the pupils, owing to the fact that the sympathetic fibers from the deep cervical ganglionic plexus enter the spinal cord through the first dorsal and, at times, through the eighth cervical roots. Injury, therefore, to these roots leads to an unopposed action of the motor occuli nerve.

Pathologically, in the milder cases, the stretching or tearing forces result in a greater or less degree of hemorrhage or edema into the nerve sheaths. In others, there may be a rupture of the perineural sheath, accompanied by hemorrhage into the substance of the nerve trunk, associated with a tearing apart or separation of the nerve fibers. The latter condition leads, of course, to permanently impaired function and to the formation of scar tissue in the nerve track. In the more severe cases of the upper arm type, there is a partial or complete division of the fifth and sixth cervical roots, which leads to a more permanent form of paralysis than usual, and the formation of a more extensive area of scar tissue.

The force producing these lesions is variable, and so the lesions are variable. The nerve roots are often frayed out inside the sheath instead of being torn across evenly, and in this way the lesion may be incomplete at any given cross section of a nerve, but involves different fibers at different levels. This scar tissue contracts in time, and not only effectually prevents the regeneration of the nerves, but, by its contraction, may press on and destroy the few fibers that may have escaped the original injury.

The other type, known as the lower arm or whole arm type, is the result of either a lesion involving all the nerves of the plexus, or, in the distinctly lower arm type in which the lower arm and hand alone are involved, of the so-called Klumpke's paralysis, in which the lesion probably involves the eighth cervical and first dorsal roots alone. This type generally results from traction applied in a breech case with the arm extended, or to traction in the axilla in a vertex presentation. Pathologically, the conditions are similar

to those seen in the other types, depending on the severity of the injury. No case in which operation has been performed has failed to show a definite pathologic lesion of the brachial plexus, definitely corresponding to the muscles involved.

### ROENTGEN-RAY FINDINGS

A great number of these patients have been roentgenographed at all ages; that is, the ages of the patients varied from 2 days to 18 or 20 years. The findings have been rather characteristic. In the early stages there has been practically nothing shown in the roentgenogram except an occasional fracture, either of the clavicle or of the humerus. We have been unable to demonstrate any epiphyseal separations or dislocations. As time goes on, the roentgenograms show rather characteristic changes; that is, the shaft of the humerus is a little smaller and the epiphyseal head of the humerus is a little smaller than the one on the well side. The glenoid fossa becomes flattened, particularly in the older babies, when there is a posterior subluxation. In these older babies, associated with the posterior subluxation, there is seen a hooking of the acromion, more or less marked and depending somewhat in its extent on the degree of subluxation.

There is also seen a marked elongation of the coracoid process, due probably to the pull of the contracted coracobrachialis muscle. The scapula is always seen rotated to a certain extent towards the axilla, as well as elevated so that the superior vertebral angle is presented frequently well above the line of the clavicle. One must be on one's guard in certain of these cases to differentiate the condition from Sprengle's deformity or a congenital elevation of the scapula. In regard to the elbow, the roentgenographic findings are of interest. In certain cases, which so far we cannot classify correctly, there appears a subluxation or dislocation of the head of the radius, which extends in some instances well up in front of the lower end of the humerus, and not only blocks flexion but limits supination and pronation.

### CLINICAL FINDINGS

Clinically, there is nothing new of any particular importance in regard to these cases. They present practically the usual conditions and run fairly true to type. We have, however, not been sticking quite as closely to our hard and fast line of upper arm and whole arm classification, although this is a fair method, but we find that many cases show certain clinical symptoms of the two types. A certain proportion of young babies are presented to the clinic with what apparently is only the upper arm type of paralysis, but there is also a wrist drop present which ordinarily we have associated with the whole arm type. We have learned to discriminate about this wrist drop in that we are not willing to make any definite statement in regard to the prognosis for at least six or eight weeks, for we find that many of the wrist drops will wholly clear up by the end of that time, and leave nothing but a simple upper arm type of paralysis. When the wrist drop has not cleared up by the end of six or eight weeks, we then classify the type as whole arm paralysis and treat it on that basis.

As I have stated before, the pupillary inequality is of the greatest importance. A good many cases present at first pupillary inequality, with the small pupil on the affected side. If this pupillary inequality persists in connection with the wrist drop, or the whole arm type of paralysis, beyond six or eight weeks, we are sure we are dealing with a serious injury to the plexus, which has probably resulted in an evulsion of the two lower roots of the plexus from the spinal cord, and so breaks the reflex sympathetic arc, which connects with the motor control of the eye. This is an important pathognomonic point, and if the pupillary inequality persists, one may be absolutely sure and safe in giving a bad prognosis.

### TREATMENT

The treatment of these cases has not varied very much from that which has been previously described. We are not as insistent on the use of splints from the very start as we were at first, and the reason for the change is this: We have found that in certain cases the use of a splint seems to cause a certain amount of swelling about the wrist and elbow, and makes the exercise treatment, when the splint is removed, painful and difficult. Just why this should occur we have not been able to determine, but it has occurred and makes us a little more guarded in the use of the splint. We have found also that the use of the splint in certain children leads to a slower convalescence and a less free use of the arm, even with adequate treatment, so that we discard the splint, even in the face of the possibility of increasing muscle contractures, because we feel that we may be able adequately to supervise treatment to control the contractures, and in this way give the child a freer and better use of the arm than it would have with the constant wearing of the splint. Operations designed to relieve muscle contracture we undertake freely, as a rule, not earlier than four or five years, and by division of the contracted muscles we find that we are able to give the child a very much better arm, not only from a cosmetic but also from a functional point of view.

In regard to operations on the brachial plexus, we are not taking quite the radical stand that we have taken in the past. We are more willing to operate in certain cases, particularly in those of the upper arm type in which one or two muscles seem to be permanently paralyzed or weakened, so much so that they cannot function successfully. In the whole arm type of cases, when there is no functional improvement at all from muscle reeducation, operation on the plexus is indicated but nothing is promised.

In the whole arm types, we feel that three months is a fair period to try massage and muscle reeducation and if there is no evidence of any functional return during that period, that it is fair at the end of that time to explore the plexus and attempt to repair it.

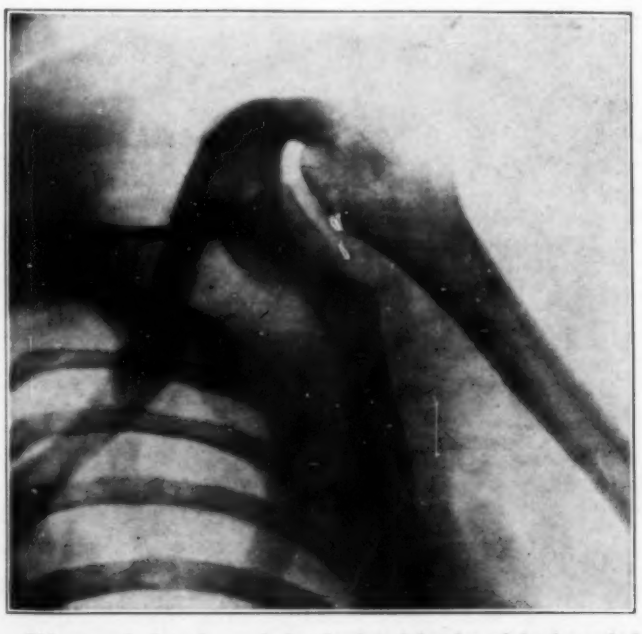
In the upper arm types, we often wait until the children are 4 or 5 years old, because by that time we can also divide muscle contractures that are preventing free use of the arm. We have had no very brilliant results from the plexus repair. Many of the plexuses that have been operated on have shown absolutely nothing in the way of functional recovery, and nothing could be expected from the type of injury found at the time of operation.

A few cases suggest that a plexus operation, always in connection with the muscle operation, may offer a better arm in the end. However, we are not overenthusiastic on this point. In certain of the older children, posterior subluxation of the shoulder joint can be reduced only (1) by means of the muscle cutting operation and (2) by the division and elevation or removal of the hooking of the acromion, which comes down in front of the head of the humerus, and prevents its proper reduction.

In a certain number of cases in which the pronator radii teres has become very much contracted, we have divided this muscle with great benefit.

### AUTHOR'S OPERATION

An incision is made on the anterior aspect of the arm, beginning at the tip of the acromion and carried down to below the insertion of the pectoralis major. The cephalic vein is found generally in the outer edge of the wound and tied or retracted outward. The tendinous insertion of the pectoralis major is then defined, raised on an instrument, and divided all the way across. The pectoralis major muscle is then retracted inward, out of the way, bringing into view at the bottom of the wound the inner edge of the coracobrachialis muscle. This muscle is then defined upward until the coracoid process is reached, the arm being outwardly rotated and abducted. The tip of the coracoid process, which is usually found elongated, is completely separated from its base, together with the insertion of the coracobrachialis, the short head of the biceps and the pectoralis minor. Not more than about one fourth or three eighths of the tip needs to be removed to accomplish this. This allows the coracobrachialis and the short head of the biceps to retract downward out of the way, and allows much freer outward rotation and abduction of the arm. The capsule of the shoulder joint is then seen in the bottom of the wound as well as the three horizontal circumflex veins. Just above the upper vein is the lower edge of the subscapularis tendon. This lower edge should be defined. A curved instrument is then inserted just underneath this tendon, which is fairly wide at this point, and the tendon completely divided on the instrument. This prevents any opening of the shoulder joint capsule; and, once this subscapularis tendon has been divided, outward rotation, abduction and elevation of the arm are perfectly free.



Old case of obstetric paralysis, showing deformity of head, marked hooking of the acromion, flattening of the glenoid, and subluxation of head.

The only condition then that will block free outward rotation, abduction and elevation is a considerable degree of hooking of the acromion. If this condition exists, such portions of the acromion as block the restoration of the head of the humerus to the glenoid should be removed. The operation is then complete and the only stitches needed to close the wound are stitches to the fascia and skin. The arm is then put up on a splint in an abducted, elevated, outwardly rotated and supinated position.

Muscle reeducation, active and passive use of the arm, begins just as soon as the stitches are out, which is in about eight or ten days.

We have operated in about sixty or seventy cases. Our results have been satisfactory, that is, in the upper arm types, and while we cannot restore the arms to normal, we can improve them functionally, so that they are very useful.

There are one or two preoperative conditions that have bothered us a good deal: 1. For about a year after this operation, and sometimes even longer, there is considerable difficulty in inwardly rotating the upper arm, or in putting the hand on the opposite shoulder. 2. In almost all cases after operation there is a good deal of limitation of rotation in the joint itself, which, however, is eventually overcome. 3. With the arm hanging at the side, there persists almost always a considerable rotation of the scapula in a vertical plane, even when there is apparently free motion of the shoulder joint. Just why this is we have not been able to determine. It does not impair the function of the arm, but does not make for a cosmetic success.

### CONCLUSIONS

In the main, our experience has been that if we can get our babies early, we can in a great many instances prevent later operations, that is, on the upper arm types, and we can give them fairly good functional arms, with the exception of the ability to supinate normally. In old cases in which there has been no treatment, operation has to be performed almost invariably.

Children are better treated under the eyes of a physician and a properly trained masseur or nurse. Better results are obtained in this way than with those babies left to the parents' care. We have to leave a great many babies to the parents on account of economical and social conditions, and because they live far from the clinic. We do not like to do so, because our results are never as satisfactory.

The treatment is, as in every condition occurring in babyhood, to be begun immediately and should be carried out faithfully for years, and except in the whole arm type of paralysis, a fairly good functional arm can be hoped for. Arms, when first seen, should never be put in a sling or a Velpeau bandage, but should be either left entirely free with the other arm pinned, or should be put on a splint.

321 Dartmouth Street.

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**Cost of County Health Department.**—For all except the most sparsely populated and poorest counties, the minimum cost of a county health department should be at least $10,000 a year. In the more populous counties, a larger budget will be needed to secure adequate service. In general, it may be stated that an expenditure of 50 cents per capita per annum should furnish a county with reasonably adequate health service. (This does not include hospital expenses, bedside nursing, or pauper relief.) A budget of 25 cents per capita should be the minimum in any except the poorest counties.—Parran, Thomas, Jr.: Cooperative County Health Work, *Pub. Health Rep.* **40**:986 (May 15) 1925.

# BIRTH INJURIES REQUIRING ORTHOPEDIC TREATMENTS*

SAMUEL W. BOORSTEIN, M.D.
NEW YORK

In the last few years, proper and immediate treatment of the child for injuries received at parturition has been instituted. The prognosis in these serious injuries has therefore been greatly modified. The profession at large and the lay public recognize that many of the conditions, classified till now as congenital, are really but later manifestations of traumatic lesions sustained at birth. These lesions remained undiagnosed in the new-born, possibly because their symptoms were not recognized, but more probably because the obstetrician failed to examine the new-born with the necessary care. If the infants are properly examined immediately after birth and the early symptoms looked for, a fair diagnosis may perhaps be reached. A great many of the later disabling deformities can be avoided should the obstetrician consult the orthopedic surgeon shortly after parturition. Many of these cases could be entirely cured. It is my purpose in this paper to impress on the profession the necessity of very early orthopedic treatments. The methods should be stressed in the medical schools. Some of these treatments can be instituted by the general practitioner himself.

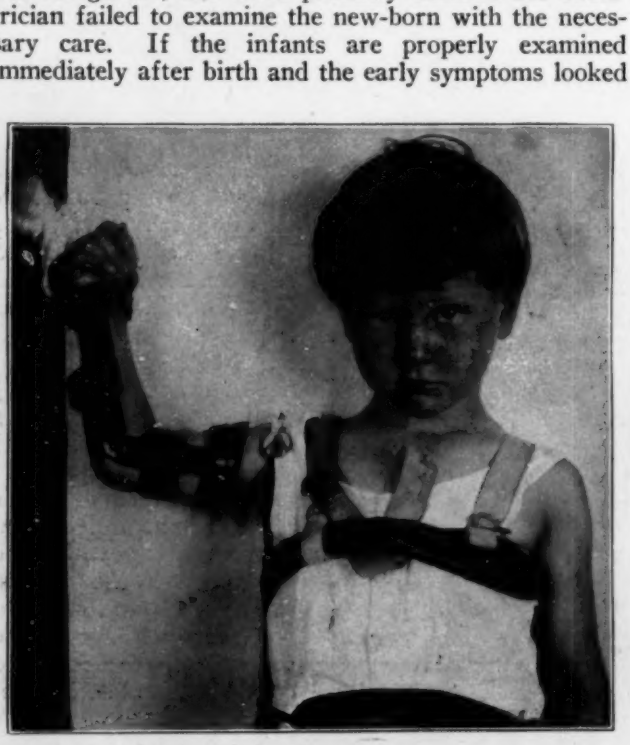

Fig. 1.—Patient with Erb's paralysis after a Sever operation, showing the proper position in which a deltoid brace should be worn in such cases.

## GENERAL CONSIDERATIONS

A birth injury refers to traumatic injuries sustained during labor and delivery and in the common and necessary manipulation of the new-born. Ehrenfest [1] arrives at the following conclusions:

> I lay stress on the fact that the child can be more or less severely traumatized also in a normal labor, in a spontaneous labor, if we grant that the term "spontaneous" by common consent includes as well deliveries in which the expulsion of the fetus is actually hastened by a dose of pituitary extract. In by far the larger number of instances, however, serious traumas are observed after labors terminated by operations or other artificial means.

Such statements, coming from so noted an obstetrician, should be a warning to prevent occurrence of birth injuries. If this warning is heeded, no orthopedic care will be necessary.

The best results in all these injuries can be obtained if the treatments are instituted early. The obstetric services of the general and special hospitals should include in their armamentarium the orthopedic appliances to institute early treatment.

## INTRACRANIAL INJURIES

Intracranial injuries constitute the most serious and pathetic cases and embody the idiotic, epileptic, Little's, paraplegia, diplegia, hemiplegia and monoplegia. Ehrenfest [2] says:

> For the majority of them, the responsible mechanical cause is recognized in definite anomalies of labor, breech labors, extraction of the aftercoming head after version, difficult forceps extractions, especially in the cases of mechanical dystocia, etc. In spontaneous delivery, the immediate cause of the injury is a mechanical one, the compression of the head on its passage through the birth canal, both through its bony and its soft portions.
>
> In the presence of only slight intracephalic traumatic lesions, a decreased coagulability of the blood and inappropriate manipulations during resuscitation necessarily tend to hasten or to prolong the escape of blood from injured vessels, though small, and thus represent important contributory factors in the causation of cerebral hemorrhages.

The pathologic condition is a lesion of the motor area of the brain. This is followed by atrophy, retarded development, sclerosis or softening of the affected portion and a degeneration of the pyramidal tracts and later the columns of the cord.

*Symptomatology.*—The symptoms of late cases are well known and need not be repeated here. Effective therapy, often life saving, is plainly dependent on early diagnosis. As most of the deliveries are performed by the general practitioner, it is he who must familiarize himself with the early symptomatology so that he will be able actually to diagnose, or at least to know when to suspect, such injuries.

The early symptoms are as follows: The infants are very restless and cry almost incessantly. Pressure on the fontanel produces respiratory distress, screaming or even convulsions. If the hemorrhage is not excessive, these infants refuse to nurse. Nursing usually is poor and clumsy. Retinal hemorrhages, inequality of the pupils, squinting and nystagmus are often found.

Obstetric prophylaxis is out of the sphere of this paper.

*Orthopedic Prophylactic Treatments.*—I agree with Steindler [3] when he says:

> In no form of paralysis is the importance of prophylactic measures so great in preventing deformities as it is in spastic paralysis; and in no form of paralysis has it been so little used and the possibilities of prophylaxis so grossly neglected

* From the surgical and obstetric divisions of Fordham Hospital.

* Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Ehrenfest, Hugo: The Prevention of Birth Injuries of the Child, Illinois M. J. 44: 20 (July) 1923.

2. Ehrenfest, Hugo: Birth Injuries of the Child, New York, D. Appleton & Co., 1922.

3. Steindler, Arthur: Reconstructive Surgery of the Upper Extremity, New York, D. Appleton & Co., 1923.

as in this very type. The measures to prevent contractures must be instituted at the earliest possible moment. This is even more urgent in spastic cases than in flaccid paralysis, where the deformities develop more gradually and are, for a longer time, amenable to correction.

The prevention of contractures has been followed by all progressive orthopedists in anterior poliomyelitis, in obstetric paralysis and in peripheral nerve injury. In previous papers I[4] have shown that, in hemiplegias occurring in adults, all the deformities can be prevented if plaster is applied immediately after the apoplectic attack. It seems logical, therefore, that this should be efficacious in these infants. A small Thomas double abduction frame with attachments for the hands to keep the shoulders abducted and rotated outward, and provisions for increasing the abduction of the lower extremities, will do the work well. There must be foot pieces to hold the feet at a right angle. The flexion contracture of the elbow is usually not as rigid as the contracture of the wrist joints. If the angle of flexion is suitable, one need not change it. For the elbow, we may use a Funsten brace advocated by Steindler.[5] For the hand, a Jones cock-up splint is used. If the symptoms point toward hemiplegia, we should use the same methods for one side only and pay special attention to the Achilles tendon and to the wrist. Such splints can be kept at hand like Thomas Jones splints for fractured femurs.

The braces can easily be applied and used for a few weeks. Even if no further symptoms develop, it will have been worth while. Massage and similar treatments are instituted when advisable. We cannot predict the mental deficiency, but the deformities prevented will have a beneficial effect. (We know that even in later life the mental condition often improves if the contractions are removed.)

I have had quite a few cases treated in this manner in early infancy with most encouraging results. Unfortunately, none of these cases came to me when only 1 or 2 days old. They are very seldom referred to us so soon. I hope that articles such as this will stimulate the obstetrician to refer them early.

If the child is seen later, the general treatments advocated by the orthopedists are used. Jones and Lovett[5] outline these treatments as follows: muscle reeducation; operations on the muscles or tendons as tenotomy, myotomy and muscle transplantation; operations on the nervous system such as cerebral decompression, Forster's operation, Stoffel's operation, and alcohol infiltration of nerves. At present we add the new method of sympathetic ramisection advocated by Royle.[6]

The treatment of the mental condition of the child is beyond the scope of this paper.

### OBSTETRIC BRACHIAL PARALYSIS

Obstetric brachial paralysis, which up to a few years ago was considered incurable, has been brought before the profession by Taylor,[7] Sever,[8] Fairbank,[9] Platt,[10] and myself.[11] The etiology has been cleared up. The condition is now considered curable, and the earlier the treatments are instituted the better are the results. The orthopedic surgeon is now being consulted very early and thus he has a chance to prevent the distressing and disabling deformities and frequently to institute a complete cure. In a previous article,[12] I gave the following conclusions:

1. Obstetric brachial paralysis is due to stretching or tearing of the cervical roots of the brachial plexus.

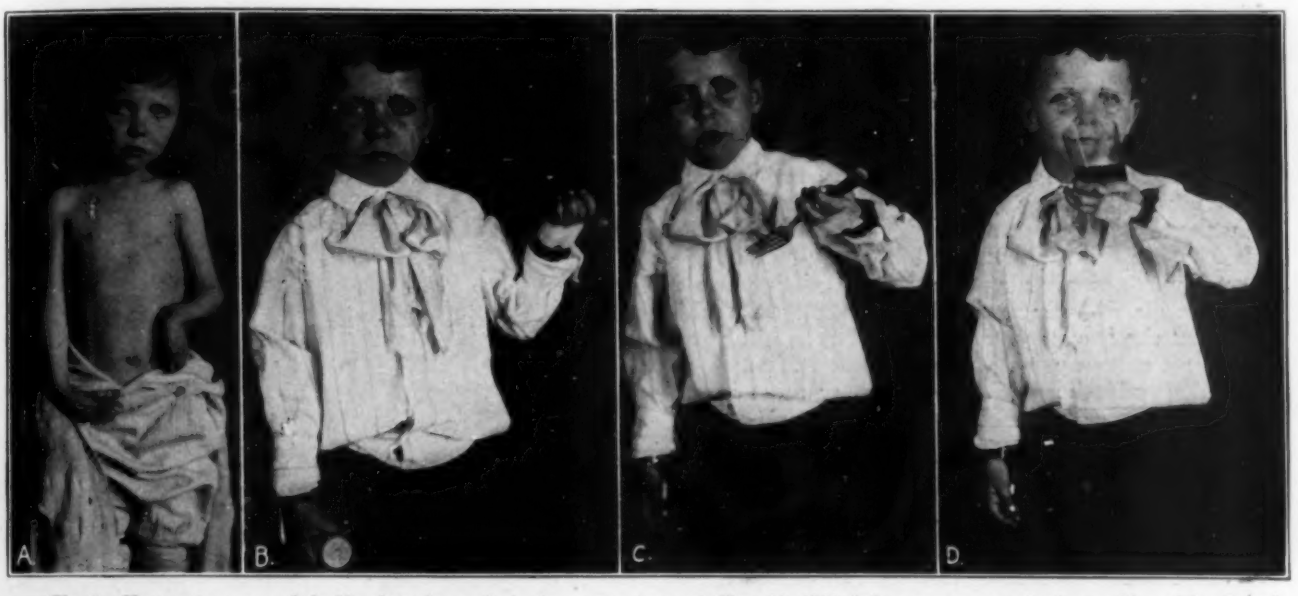


Fig. 2.—Very severe case of double obstetric paralysis, lower arm type: *A*, Nov. 23, 1920, before treatments, showing position of hands and the deformities; *B*, Aug. 23, 1923, after operations, showing ability to throw ball with the right hand; *C*, Aug. 23, 1923, showing ability to use a fork with the left hand; *D*, Aug. 23, 1923, showing ability to drink with the left hand.

4. Elliott, G. R., and Boorstein, S. W.: Orthopedic Treatment in Hemiplegics of Long Standing, J. A. M. A. **47**: 31-32 (July 1) 1916. Taylor, A. S.; Byrne, Joseph; and Boorstein, S. W.: Early Surgical and Orthopedic Treatments in Hemiplegia, Surg., Gynec. & Obst. **29**: 398 (Oct.) 1919.

5. Jones, Robert; and Lovett, R. W.: Orthopedic Surgery, New York, William Wood & Co., 1923.

6. Royle, N. D.: The Treatment of Spastic Paralysis by Sympathetic Ramisection: Experimental Basis and Clinical Results, Surg., Gynec. & Obst. **39**: 701-720 (Dec.) 1924.

7. Taylor, A. S.: Brachial Birth Palsy and Injuries of Similar Type in Adults, Surg., Gynec. & Obst. **30**: 494-503 (May) 1920.

8. Sever, J. W.: Obstetric Paralysis, Am. J. Dis. Child. **12**: 541-578 (Dec.) 1916.

9. Fairbank, H. A. T.: J. Orthop. Surg. **2**: 284, 1920 (discussion).

10. Platt, Harry: Birth Paralysis, J. Orth. Surg. **2**: 272 (May) 1920.

11. Boorstein, S. W.: Treatment of Obstetric Paralysis, with a Report of Fifty Cases, J. Bone & Joint Surg. **5**: 778-803 (Oct.) 1923; Obstetric Brachial Paralysis (Erb's Palsy), J. A. M. A. **82**: 862-868 (March 15) 1924.

12. Boorstein (Footnote 11, second reference).

2. It is almost always associated with a difficult labor; in many instances, forceps having been used.

3. If these cases are treated early and properly, one may expect in the mild cases a good recovery in three or four months.

4. The more severe cases will require about six or seven months for a complete recovery.

5. Nerve operations are indicated if no advance is made in four months. After that period, if sufficient improvement is noticed one may wait four months more, provided, of course, proper orthopedic treatments are continued.

6. The shoulder should immediately be put up in a splint or brace to prevent stretching of the paralyzed muscles and contracture of the unopposed muscles. (Figs. 1 and 8 *B, D.*).

7. Even in the whole or the lower type, one may try conservative treatments for a while and then resort to a plexus operation. The result is not so discouraging as some textbooks would lead us to believe (Fig. 2).

## FRACTURES

There are two kinds of fractures: (1) true fractures due to a definite trauma from without, and (2) pseudofractures due to amniotic adhesions, amniotic bands and intra-uterine pressure. Some of the uterine fractures produced at the delivery are really due to a previous existing intra-uterine disease. Whether the disease is responsible for the fracture or the trauma used at the delivery, it is certainly acknowledged that of all the birth injuries this is the most embarrassing. Any one who has been so unfortunate as to hear suddenly the crack of a bone after a hard delivery and has looked around at the family standing near-by will never forget the situation. He is certainly anxious to obtain assistance quickly. He may trust the textbooks which assert that the fractures usually heal, but he must know how to fix them up immediately. For such accidents the student and the general practitioner must be prepared in advance.

The bones most commonly fractured are the femur and humerus. The humerus is broken both in vertex

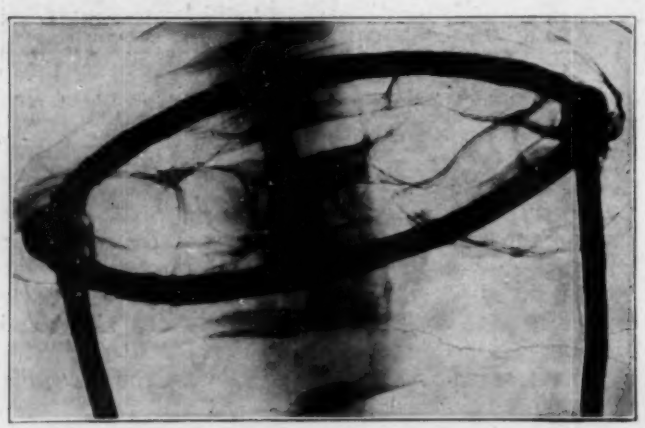

Fig. 3.—Fracture of the femur, showing improper adjustment of the Thomas Jones splint; this was afterward corrected.

and breech labors by being firmly pressed against the symphysis. This pressure is exaggerated by traction on the fetus. Fractures of the femur are usually transverse in its upper half or third. Fractures of the tibia and fibula are usually produced in the management or mismanagement of breech labors.

*Fractures of the Clavicle.*—These are more common than formerly believed. They are found in vertex as well as in breech presentations and are usually transverse. The arm lying limply at the side should suggest the possibility of this fracture in addition to brachial palsy. The prognosis is good.

A separation of the epiphysis of the humerus may also be found at the shoulder as a result of traction, but it is hard to recognize unless symptoms are noticeable.

*Injuries of the Cranial Bones.*—Ordinarily these are mere fissures or deep indentations that do not give rise

Fig. 4.—Fracture of femur: splint in place, with marked callus present.

to any visible anomalies. The dangers are usually the result of intracranial injuries.

*Fractures of Vertebral Column.*—These are common in version and extraction, often causing an injury to the cord also. Hyperextension of the vertebral column in the Veit-Smellie maneuver makes that procedure dangerous. The symptoms are often those of cord injury. A roentgenogram should be taken of the spine in each case of suspected spinal injury.

*Diagnosis.*—In diagnosing a fracture to determine whether it was sustained during birth or within the uterus, it might be helpful to note that, according to Jones and Lovett,[5] fractures at birth are healed with some deformity over the apex, and there is generally a dimple or scarlike mark.

*Treatment.*—Many complicated methods have been advocated for the treatment of fractures of the upper and lower extremities. In a previous paper, I[13] discussed these methods in detail and came to the conclusion that a Thomas Jones splint can be used. A half ring is more adaptable in these cases. The ring must not be too wide, as it will press on the axillary vessels, if the case is one involving the upper extremity, and thus produce a deformity. I have used the Thomas Jones splint in many cases and have become convinced of the ease with which the splint can be applied in fractures of the femur, humerus, tibia, fibula and the forearm bones. I have become impressed by the good results that almost invariably follow the use of the splint (Figs. 3, 4 and 5).

13. Boorstein, S. W.: Treatment of Birth Fractures at Fordham Hospital, Am. J. Dis. Child. **19**: 375-383 (May) 1920.

The advantages are that it allows easier transportation, permits cleansing of the children and saves a great deal of watching. It permits early massage. The deformity is easily controlled. The union probably occurs earlier on account of the ability of the infant to use the limb, to elevate it together with the brace.

In fractures at the elbow joint, acute flexion (the Jones principle) should be followed. This can be done with the plaster of Paris or a flannel bandage.

For fractures of the clavicle—though some suggest that no treatments are necessary—I have always considered some form of treatment advisable. It can be immobilized by a figure-of-eight flannel bandage to the other shoulder, but one should protect the axillae by putting felt under the bandage (Fig. 6).

Treatment of separation of the epiphysis of the humerus should consist of immobilization on a deltoid abduction splint.

For fracture of cranial bones, the symptomless case is best let alone; but if there are signs of an intracephalic disturbance, the treatment should be surgical. It is hard, however, to decide when to operate, and these doubtful cases should be watched very carefully for a few weeks to note symptoms of intracranial pressure. The orthopedic treatments for the extremities should, however, not be neglected. We may hope that the carefully recorded necropsies on the early deaths may help us to decide when to operate.

### TORTICOLLIS

Of the other injuries sustained at birth, torticollis should be mentioned. Meyerding [14] supports the congenital theory, but says that it may be due to trauma at or preceding birth. Stern [15] reports a rare case to support the theory that congenital torticollis is due to an abnormal attitude and lack of space in the uterus. Still, many cases of obstetric paralysis or fractured clavicle give evidence of injury of the sternocleidomastoid. Jones and Lovett [5] are of the distinct opinion that hematoma of the sternocleidomastoid often produces torticollis.

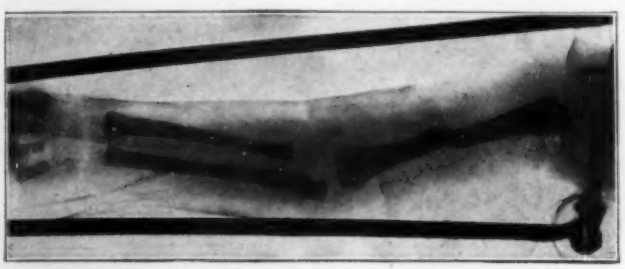

Fig. 5.—Birth fracture of the humerus in a Thomas Jones splint, showing how the fragments can be held with that splint.

Fig. 6.—Birth fracture of the clavicle: good position and abundance of callus.

*Treatment.*—Support is needed and can easily be given by a felt collar applied to the neck to keep the head straight. One can put soft flannel underneath. The felt collar does not interfere with the nursing and is removed for massage (Fig. 7).

### CONCLUSIONS

1. Many permanent injuries are traced to parturitional trauma.

Fig. 7.—Application of a felt collar after operation for torticollis; final result with this immobilization was very good; it may be applied immediately after birth without discomfort.

2. Many of these injuries can be diagnosed at birth if careful examination is made.

3. The obstetrician or the general practitioner should acquaint himself with the proper methods of prompt diagnosis so that early treatment can be instituted where necessary. If he himself cannot diagnose the case, he should consult the orthopedic surgeon.

4. The spastic cases should be treated at once even when we are in doubt whether the mental condition of the child will ever be normal. One cannot foretell how much mental recovery will be obtained.

5. The armamentarium of the obstetric service in the hospital should include the braces or wire splints necessary for immediate attention in these cases.

6. Cases of intracranial injury are treated by a double Thomas abduction frame with arm attachments.

7. Obstetric brachial paralysis is best treated by a plaster or an abduction splint keeping the arm in abduction and outward rotation. Later on, massage and exercises are instituted.

8. Fractures of the femur and the humerus are treated with a small Thomas Jones splint.

9. Fractures of the spine are treated by means of a Bradford frame.

10. Torticollis is prevented by a felt collar around the neck.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. SEVER AND BOORSTEIN

DR. J. T. RUGH, Philadelphia: There is no doubt that the accuracy of observation of the general run of practitioners is not as keen as it should be. The education of the practitioner constitutes a large field of our work: not that we can make orthopedic surgeons out of them—that is an impossibility—but that we draw their attention to the frequency

14. Meyerding, H. W.: Congenital Torticollis, J. Orth. Surg. 3: 91 (March) 1921.
15. Stern, A.: Etiology of Congenital Torticollis, Monatschr. f. Geburtsh. u. Gynäk. 65: 179, 1924.

of malformations at the birth of the child, and the necessity of the early recognition of these conditions. There are several points that I wish to emphasize. In the first place, Dr. Boorstein advocated the equipment of our hospitals with orthopedic appliances that will enable the obstetricians or the surgeons to take care of these cases. There are two distinct types of the work presented in both of these papers. One is the work by the general practitioner in the home of the patient, and the other is the work of the obstetrician and the surgeon in institutions. There is a marked difference between them, and I believe that our greatest work lies with the practitioner in the home, rather than in institutions. It is very nice to have an equipment that will enable the practitioner to take care of these deformities when they arise, but how many of them know how to use mechanical appliances? In regard to the special types of deformities, congenital fractures have been mentioned. There is one I would call attention to that has proved most troublesome, and that is the congenital fracture in the lower third of the tibia, often due to a congenital cyst or to some disease condition in the lower end of that bone of unknown origin. Those cases have proved in my hands the most troublesome type of congenital fractures, and in several instances have ultimately resulted in amputation of the leg. I want to stress the importance of the classification of the obstetric paralyses of the arm as given by Dr. Sever. We must make more accurate observations as to the type of paralysis, whether the upper arm type, the lower arm type, or the total paralysis. The other point I wish to mention is with regard to cases of congenital torticollis. I feel very strongly that there is in the majority of these cases a traumatic element rather than a congenital condition.

DR. H. J. FITZSIMMONS, Boston: One of the authors and Dr. Rugh have somewhat misled us in stating that the congenital torticollis is correctible by a simple apparatus. A congenital torticollis is one in which there is a congenital shortening of the muscle. The ones that Dr. Rugh mentioned are acquired. They may be due to obstetric injuries, but the majority of congenital torticollis cases are not. This is an observation made from a study of more than 500 cases. They are found in extra-uterine pregnancies and in conditions in which there has been no trauma, and certain of the hematomas that are found after strenuous deliveries and injuries are not followed by torticollis.

DR. G. I. BAUMAN, Cleveland: I have been impressed with the fact that injuries to the sternocleidomastoid are not at all uncommon. To my knowledge, none of those cases have been followed by a torticollis. The sternomastoid muscle is changed from ordinary muscle tissue to fibrous tissue. In other words, there is a fibrosis of the muscle, and that is not usually the result of a trauma in other muscles. I should like to ask Dr. Boorstein whether he has seen a real torticollis following a hematoma in the sternomastoid muscle. A few years ago I examined a baby with a double obstetric paralysis, absolutely symmetrical, and of the whole arm type. Has Dr. Sever seen any similar case?

DR. SAMUEL W. BOORSTEIN, New York: Dr. Rugh mentioned that there is a great deal of difference between treating these patients at home and in institutions. Of course, orthopedic surgeons can treat these cases better, but I did not want to appear too self-interested by making the statement that all cases should be sent to them. Besides, as Dr. Sever said, many of these patients live out of town, and the general practitioners should know how to take care of them partially, and see the orthopedic surgeon occasionally. Dr. Rugh mentioned congenital torticollis, and Dr. Bauman asked me whether I have ever seen a case following hematoma. I have not. I said that in many cases that does follow and that Jones and Lovett gave it as a cause that it may very often follow, and I felt it was worth while to prevent its occurrence.

DR. J. W. SEVER, Boston: It is poor obstetrics in many instances that gives us these serious conditions. The thing to look for is an arm that lies at the side perfectly weak and paralyzed, inwardly rotated, the hand pronated, and no muscle power whatever, unequal pupils, frequently ptosis of the eyelids, sometimes a facial paralysis. That is a perfectly typical, complete picture. When one has a case like that, one should not tell the parents that the child is going to make a perfect recovery. I have never seen a perfect, complete recovery under any conditions. These patients always carry through life a picture of obstetric paralysis of the arm. I did not suppose that the question of hematoma ever entered into the question of torticollis. I have never seen a case of torticollis following hematoma. I supposed the theory had been accepted as shown by Josserand and Viannay in 1906 that it was due to an intra-uterine position in most cases which held the head in such a position that the arterial supply from the superior thyroid artery to the sternomastoid muscle was cut off, and as a result there occurred a contraction or fibrosis of the sternomastoid. That is apparently the accepted and true cause, at least as far as we know, of congenital torticollis. In regard to the double arm type of obstetric paralysis, we have had a number of cases which I have reported. They rarely are symmetrical. One arm usually is a little bit better than the other; one gets a little bit better as time goes on. I have never seen an absolutely symmetrical double arm type.

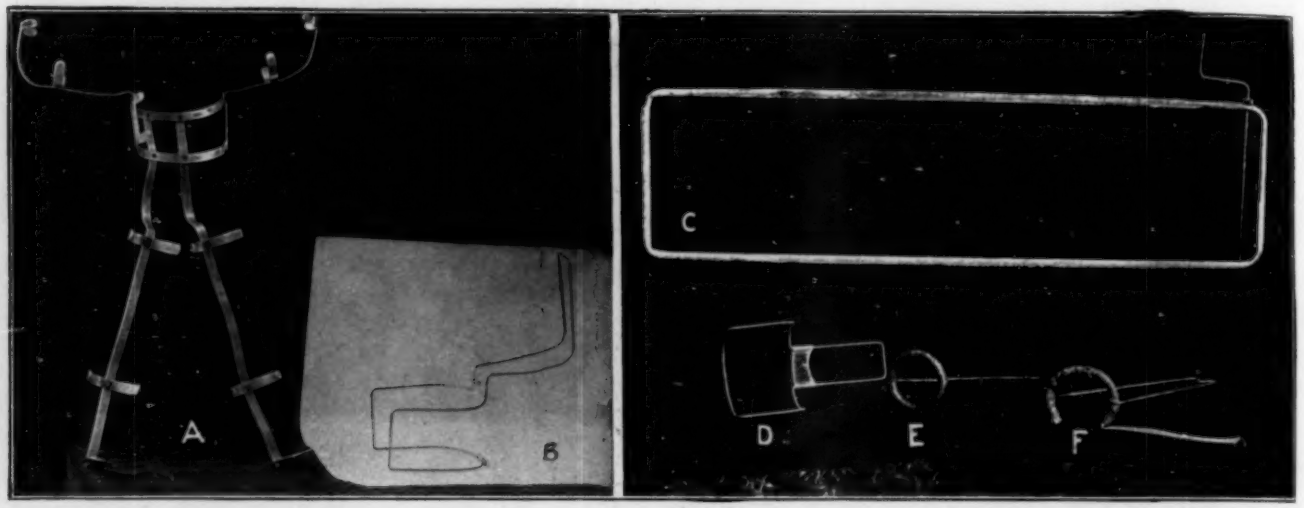



Fig. 8.—Armamentarium of orthopedic appliances for obstetric service: *A*, Thomas abduction frame; *B*, wire splint for obstetric paralysis; *C*, Bradford frame, with a windlass; *D*, wire splint for obstetric paralysis, with a narrow body frame; *E*, small Thomas Jones splint with a closed ring; *F*, small Thomas Jones splint with half ring.

# KIDNEY STONE AS A DIAGNOSTIC PROBLEM *

B. H. NICHOLS, M.D.
CLEVELAND

No consideration of kidney stones as a diagnostic problem is complete without a review of the clinical and urologic symptoms presented by this type of disease of the kidney. If we are to study only the cases in which the suspicion that a stone may be present is aroused by pain of the renal colic type, then many cases of renal calculus will remain undiagnosed. There are many cases in which pain in the genito-urinary tract is a minor complaint or is entirely absent, and I feel that in such cases, which present an atypical symptomatologic syndrome, the liability of an error in diagnosis is most apt to occur. In order to obviate this, a wholesome respect must be paid to all the symptoms that may be present in a patient suffering with a calculus of the kidney.

I am prompted to prepare this paper by the frequency with which kidney stones are found by roentgen-ray examination in patients who have been referred to me for the roentgenologic study of structures other than the kidney. In consequence, I have come to believe that in many cases kidney stones are not apprehended on account of insufficient or atypical symptoms. In order to arrive at a conclusion regarding the significance of certain clinical symptoms of calculus of the kidney, I have analyzed a series of cases to determine the frequency of occurrence of certain symptoms, together with their characteristics, and will consider them in the order of the frequency of their occurrence in this series.

TABLE 1.—*Calculus of the Kidney: Cases in Which Presence of Stone Was Definitely Proved*

| | | | |
|---|---|---|---|
| Number in series | | | 164 |
| Sex: | Number | Per Cent. | |
| Male | 104 | 63.4 | |
| Female | 60 | 36.6 | |
| Age: | | Number | |
| Under 10 years | | 2 | |
| 10 to 20 years | | 2 | |
| 20 to 30 years | | 19 | |
| 30 to 40 years | | 42 | |
| 40 to 50 years | | 43 | |
| 50 to 60 years | | 33 | |
| 60 to 70 years | | 9 | |
| 70 to 80 years | | 3 | |
| Age not stated | | 11 | |
| Side Involved: | Number | Per Cent. | |
| Right | 71 | 43.3 | |
| Left | 77 | 46.9 | |
| Bilateral | 16 | 9.76 | |
| Multiple or Single Stones: | | Number | |
| Unilateral: | | | |
| Multiple | | 61 | |
| Single | | 88 | |
| Not stated | | 1 | |
| Bilateral: | | | |
| Single in each | | 5 | |
| Single in one and multiple in other | | 4 | |
| Multiple in each | | 5 | |
| Operations performed at clinic | | | 92 |

TABLE 2.—*Symptoms*

| | | Number | Per Cent. |
|---|---|---|---|
| Pain | | 141 | 86 |
| Renal colic | 68 | | |
| History of passing stones | 27 | | |
| Pain | 73 | | |
| Pus in urine | | 127 | 77 |
| Hematuria | | 72 | 44 |
| Frequency | | 49 | 30 |
| Nausea or vomiting | | 44 | 26.8 |
| Fever | | 23 | 14 |
| Chills | | 15 | 9.17 |

TABLE 3.—*Other Conditions Associated with Kidney Calculus*

| | | Number | |
|---|---|---|---|
| Calculus of kidney with gallstones | | 3 | |
| Calculus of kidney with duodenal ulcer | | 3 | |
| Calculus of kidney in horseshoe kidney | | 3 | |
| Calculus of kidney with hydronephrosis (5 had stone in ureter also; 1 had aberrant blood vessels) | | 41 | 25% |
| Calculus of kidney with focus of infection | | 27 | |
| Teeth | 20 | | |
| Tonsils | 6 | | |
| Teeth and tonsils | 1 | | |

TABLE 4.—*Roentgenograms*

| | | Number |
|---|---|---|
| Clinic roentgen-ray examination positive | | 142 |
| Clinic roentgen-ray examination negative | | 1 |
| Roentgenogram taken outside | | 12 |
| No roentgenogram taken | | 9 |
| Confirmed at operation | 6 | |
| Confirmed at necropsy | 2 | |
| Confirmed, passing stone | 1 | |

TABLE 5.—*Recurrences*

| | Number |
|---|---|
| Total cases with history of passing stone | 41 |
| Previous operation for kidney stone | 16 |
| Previous operation for bladder stone | 4 |
| Previous operation for ureteral stone | 1 |
| Second operation for kidney stone | 1 |
| Passing stones after operation | 1 |
| Previous operation for kidney stone and recurrence after second operation | 1 |

TABLE 6.—*Atypical Clinical History of Kidney Stone and Symptomless Stones*

| | Number |
|---|---|
| Consultation because life insurance had been refused | 4 |
| Stone caught on roentgenogram of spine | 5 |
| Stone caught on roentgenogram of gastro-intestinal tract | 5 |
| Stone caught on roentgenogram of genito-urinary tract for clinically diagnosed lesion of bladder or prostate | 3 |
| Stone found at necropsy | 1 |
| Symptomless stone | 7 |
| Consultation for cold and inguinal adenitis | 1 |
| Stone found at operation in case in which roentgenograms of gastro-intestinal tract only were made and were negative | 1 |
| Total | 27 |

## SYMPTOMS

As is shown in Table 2, pain is the most constant symptom of kidney stone, having been present in 86 per cent. of the series. It is of two types: (1) aching or continuous pain, and (2) colicky pain, the so-called renal colic.

There may be a history of long standing pain with alternating periods of relief and exacerbations. When pain is accompanied by pyuria, hematuria or frequency it is reasonable to suspect that it is due to a renal calculus, and a roentgen-ray study of the kidney should be made.

Renal colic usually has a sudden onset and may require the use of an opiate for relief. If the colic is accompanied by microscopic blood or pus, the presence of calcium oxalate in the urine or uric acid crystals, together with a history of previous attacks or of the previous passage of gravel, then a roentgen-ray examination of the kidney should be made, with the expectation that a kidney stone will be found.

Next to pain, pyuria is the most common symptom and was present in 77 per cent. of this series. The presence of pus in the urine, particularly in the absence of an infection of the bladder or urethra, should always suggest the possibility of a kidney stone, especially if there is pain in the region of the kidney.

Hematuria was found in 44 per cent. of the cases. When accompanied by pyuria and pain, this is a suspi-

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

cious symptom and a search should be made for kidney stone.

The symptoms of lesser importance, unless accompanied by pain, pyuria or hematuria, in the order of their occurrence in this series, are: frequency, 30 per cent.; nausea and vomiting, 26.5 per cent.; fever, 14 per cent.; chills, 9.17 per cent.

Other points of more or less importance that have been brought out in the study of this series have been

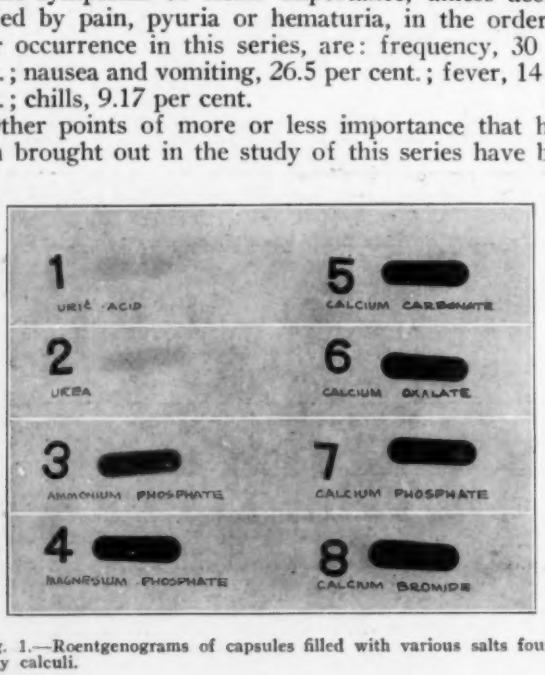



Fig. 1.—Roentgenograms of capsules filled with various salts found in kidney calculi.

the markedly higher incidence in males (63.4 per cent.); the association of the stone with hydronephrosis in 25 per cent. of the cases; the recurrence of stones and a history of a previous operation for stone.

To determine the radiability of the various types of kidney calculi, I have determined the radiability of the usual salts found in calculi by taking roentgenograms of ordinary capsules which had been filled with the pure salts (Fig 1). These studies show that uric acid has the least, and calcium bromid the greatest density; the order of density of the other salts is: uric acid, urea, ammonium phosphate, magnesium phosphate, calcium carbonate, calcium oxalate, calcium phosphate and calcium bromid.

Cystin and xanthin, both of which are rare salts, were not studied.

## TYPES OF KIDNEY STONES

Kidney stones are of two types: primary, or essential, and secondary. Stones of the essential type are formed without any apparent primary disease. This may not actually be the case, however, as it is probable that a primary disease has existed but has caused no recognizable symptoms. The formation of these stones is undoubtedly due to a sedimentation of the urinary salts, while the secondary cases are always formed about a nucleus of pus or mucus as the primary factor.

The principal chemical salts that are found in kidney calculi are uric acid, urea, calcium salts, particularly calcium oxalate, phosphates and cystin and xanthin. These salts may be pure or may be present in various combinations. The vast majority of calculi, especially the primary stones, are formed from uric acid and are often found in acid urine, associated with uric acid and crystals of urea. Uric acid stones are reddish brown, with a tendency to yellow tint. They are usually small and multiple, rather hard and faceted. They may be found as the nucleus of larger stones surrounded by a phosphate or oxalate deposit. If small, however, they may often be missed, especially if they are of a pure uric acid formation.

Fortunately for the roentgenologist, most calculi that have been present for some time in the kidney have incorporated phosphate or calcium oxalate in their formation, the high density of which is of material aid in their recognition. On the roentgen-ray film these stones show a density far beyond that of the surrounding kidney tissues; they are irregular in outline and, as previously stated, are usually multiple.

Stones formed from calcium oxalate are of a dark brownish, are rather regular in outline and have a rough surface, giving the so-called nutmeg appearance. Oxalate crystals are usually found in urine that is acid in reaction. These stones give a very distinct shadow on the roentgen-ray film and, as they are a secondary formation, they are usually large.

Calcium phosphate stones are formed rapidly and are irregular in outline. The urine in these cases is filled with phosphatic deposits and is alkaline in reaction. These stones are of medium density and are usually shown on the film. Cystin and xanthin stones are extremely rare.

With modern methods of examination, a large majority of kidney stones may be apprehended as suspicious

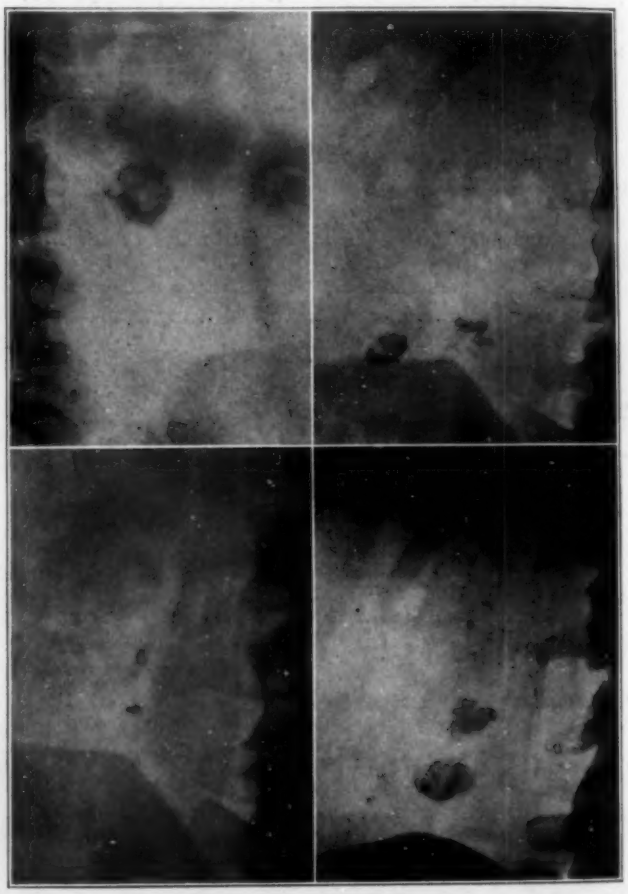


Fig. 2.—Appearance of different types of calcified glands on the roentgen-ray film.

shadows, on the primary examination. In all cases both kidneys should be examined, to rule out the possibility of bilateral calculi.

Shadows outside the kidney that may be confused with kidney calculi are gallstones, calcified glands (Fig. 2) retroperitoneal and mesenteric enteroliths, dense bone in the tip of a lateral vertebral process, foreign bodies in

the soft tissues, especially in the intestinal tract, calcified venous aneurysms, warts on the skin, postoperative scar tissue, stones in the upper ureter, defects in the film and broncholiths. Shadows within the kidney simulating stones are usually tuberculous calcifications. In a great majority of cases, stereoscopic films will rule out the extranephritic shadows. Calcified glands have a characteristic irregular appearance simulating calcifications in soft tissue. Repeated examinations will rule out gastro-intestinal shadows. The patient should be inspected at the time of examination for warts or any other condition on the surface of the body, such as postoperative scars, which may cast a shadow; in case of doubt, two films will eliminate the artefact. Ureteral calculi will be apprehended by catheterization of the ureters and a ureterogram. Plain kidney films or a pyelogram may show whether or not the shadow is within or outside the kidney.

Tuberculous calcifications are characterized by multiple irregular and widely separated shadows within the kidney outline. Confirmation of this indication may often be established by the characteristic signs of tuberculosis, as shown by the pyelogram or by the presence of pus in the urine.

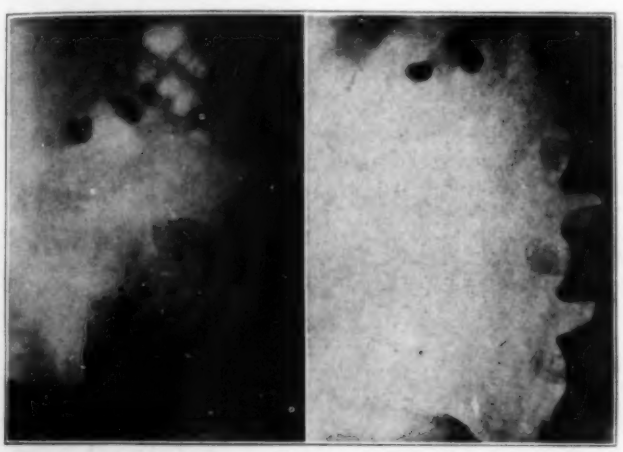


Fig. 3.—Posterior-anterior and anterior-posterior views of kidney stones.

Of especial importance is the differentiation between gallstones and kidney stones. In some cases this may be established by the general appearance of the shadows. Gallstones usually produce more or less clearly circumscribed shadows. Many of them have an outer layer rich in calcium salts, which gives a ringlike shadow with a more translucent center. Gallstones are more often multiple than are kidney stones, their arrangement corresponding to the shape and location of the gallbladder.

Kidney stones, on the other hand, are usually irregular in shape, their form often corresponding to that of the kidney pelvis or calices; or, in some instances, the stone may fill the pelvis and have branches that extend into the calices. The shadows of kidney calculi are almost always of a homogeneous density, which is quite unlike the typical gallstone shadow.

In a fairly large percentage of cases, however, calculi cannot be identified by the size, shape or general appearance of their shadows, and in such cases specific means of differential diagnosis are required. The method that I have found of the greatest value is the use of the anterior-posterior and the posterior-anterior exposures in accordance with the principle used in the localization of foreign bodies. The greater the distance of the foreign body from the film, the greater will be the size of the impression on the film (Figs. 3 and 4).

In general, we may say that when the shadow of a stone on the posterior-anterior or gallbladder film is smaller, more distinct in outline, lower in position and nearer the vertebral column than the shadow of the same stone in the anterior-posterior or kidney film, the diagnosis of a gallstone may safely be made (Fig. 5).

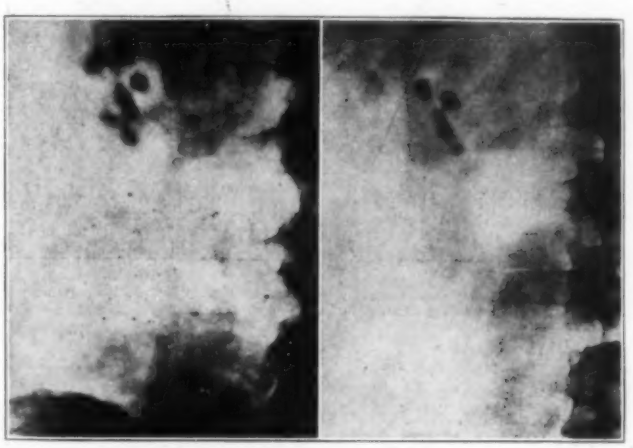


Fig. 4.—Posterior-anterior and anterior-posterior views of kidney stones.

I have found that the most valuable auxiliary measure is a pyelogram, which in the case of a kidney calculus will locate the shadow in the pelvis of the kidney (Figs. 6, 7 and 8). In the case of a gallstone, the shadow on the pyelogram will almost always lie outside the kidney pelvis. If it also lies outside the kidney in either the gallbladder film or the kidney film a calculus in the pole of the kidney will be ruled out, as a stone in this location must of necessity be associated with the kidney shadow in all exposures. It should always be borne in mind, however, that a patient may have both gallstones and a right kidney calculus.

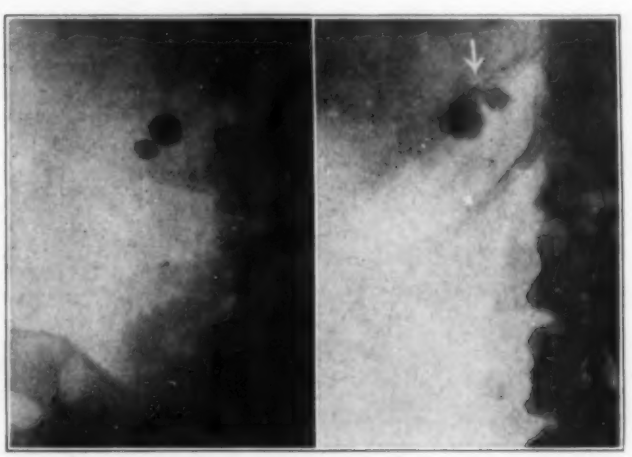


Fig. 5.—Posterior-anterior and anterior-posterior views of gallstones.

Some method for the establishment of a diagnosis in cases of stones of no greater density than the surrounding kidney tissue is a very important phase of the diagnosis of kidney stones, especially in every case in which the clinical and urinary symptoms indicate a possible kidney calculus, although the usual roentgen-ray examination of the kidney has been reported negative (Fig. 9).

I have found that this can be accomplished by pyelography of the suspected kidney, the roentgenogram of which will show areas in the pyelogram of lesser density than that of the usual 15 per cent. sodium iodid solution used for the injection, and by their definite outline these areas will not be confused with incompletely filled

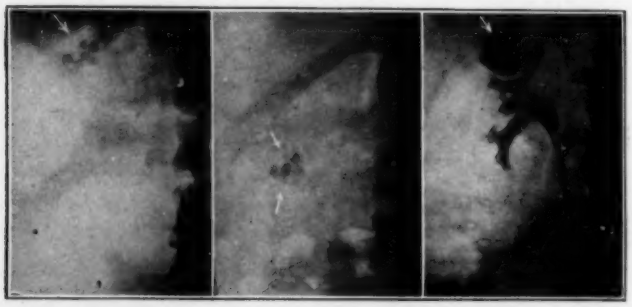
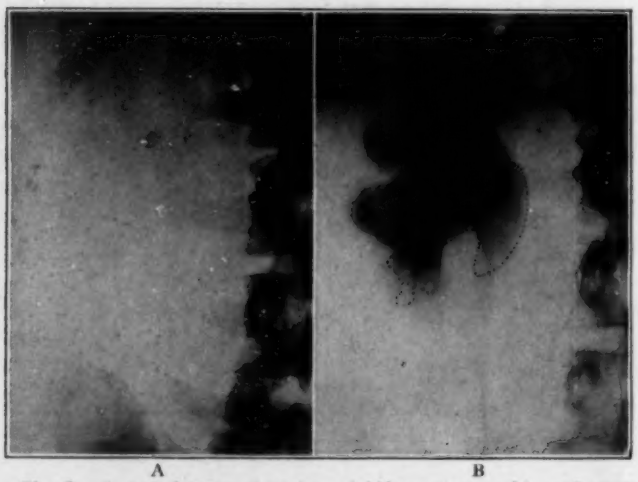


Fig. 6.—Anterior-posterior and posterior-anterior views of kidney stones, with pyelogram showing location of stones in the kidney pelvis.

pelves, blood clots in the kidney pelvis or tumors of the kidney.

Pyelography, in fact, is one of the most important aids to the study of kidney stones and to the establishment of their differential diagnosis. Associated conditions in the kidney, such as hydronephrosis or urinary retention, may be determined by pyelography alone, or combined with a function test. A large pyonephrosis or hydronephrosis, in the presence of a long history of kidney stone, will be the deciding factor in determining whether or not a nephrectomy should be done.

For a long time I have felt not only that a stone in the kidney should be verified by the loss of its shadow in the pyelographic medium which shows it to be within the kidney, but that a definite location of the stone should be made. It seemed probable that this could best be accomplished by using a solution of the opaque salt of a concentration that would permit the shadow of the calculi to be seen as a denser shadow through the



A B

Fig. 7.—*A*, anterior-posterior view of kidney stones with pyelogram; *B*, location of stones.

pyelographic shadow. In order to determine the proper solution for this purpose, I placed kidney calculi in a quantity of solution corresponding to the usual capacity of the kidney pelvis, and submerged this in a water phantom of a depth equivalent to the depth of the kidney in the average patient. From roentgenograms made from this experiment, I found that when a water phantom 8 inches in depth and a stone of average density were used with a 3.5 per cent. solution of sodium iodid, a fair shadow of the solution was obtained, and the shadow of the calculi could also be easily seen (Fig. 10). A 7 per cent. solution completely obscured the stone. I realize that variations in the density of calculi, the depth of the kidney in individual patients, and the quantity of solution required to fill the pelvis, will make it necessary to vary the concentration of the solution somewhat for individual cases. This procedure is of great aid to the surgeon, as his method of approach for the removal of a stone can be made more readily and with greater precision if the location of a calculus in the pelvis of the kidney or in a calix has been definitely determined before operation.

I have not as yet had the opportunity to use this method in a large series of cases, but I feel that it will prove to be a valuable radiologic procedure in the study of kidney stones.

## ABSTRACT OF DISCUSSION

DR. L. T. LEWALD, New York: I did not notice whether Dr. Nichols gave age incidence or not, but I have recently been interested in several cases in children of bilateral calculosis of the renal pelvis. I wonder whether he has had any cases in children as young as 3 years, and if so, what was done? We have one such case now. There have been various opinions expressed as to whether to leave the case alone surgically or whether to attempt removal of the stones. One urologist has very definitely stated that he thinks the child will survive longer without operative intervention. I, myself, feel that in some adult cases with bilateral calculi a successful outcome has been obtained by first removing the stone on the side that has less function, and after that kidney has been somewhat more restored to normal function, if that were the case, then attempting the removal of the calculus on the opposite side. I have seen a case, also, of calcification in a thrombus in the renal vein. This led to considerable confusion in diagnosis, being on the right side and in a jaundiced patient. We were cautious and suggested that, while it had the appearance in many ways of a biliary calculus, operative intervention had better be delayed until a pyelogram had been made. However, on account of the condition of the patient from the jaundice, immediate operation was undertaken with an anterior incision. The gallbladder was explored and found normal. The patient had some catarrhal obstructive jaundice and other serious complications, and died a few weeks later. The necropsy revealed a laminated concretion in the renal vein. In connection with the differential diagnosis postero-anteriorly and the reverse, I should like to ask Dr. Nichols whether he uses a standard, rather short distance in order to bring this out. If one uses a long distance, the shadows will not be proportionately different in their size, and I think that is a point to be borne in mind. Possibly, he uses a short distance to bring that out very distinctly, as shown in several of his cases. I should also like to ask whether the method of attempting to show stones of lessened density in the pelvis of the kidney might not also at times reveal a tumor or a blood clot or some other condition of the pelvis besides calculus.

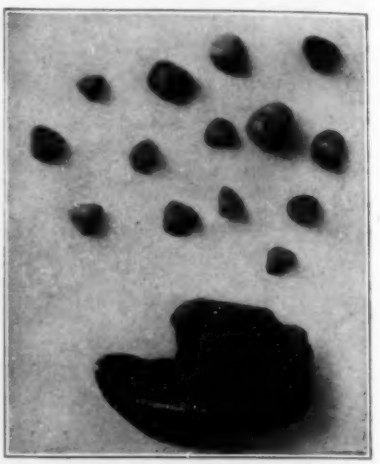


Fig. 8.—Stones removed at operation.

DR. DANIEL EISENDRATH, Chicago: Our statistics as to the frequency of bilateral calculi agree with those of Dr. Nichols. Experience during the last ten years has taught the value of conservative operations and the necessity of limiting considerably the indications for operation. We refrain from operating if there are multiple calculi in both kidneys, unless one is located so as to block the outlet of the renal pelvis and interfere greatly with the function of that kidney. In the case of calculi in one or both ureters and also in one kidney, it is advisable to remove the ureteral calculi by nonoperative or operative means before the kidney operation is undertaken. A branching calculus or multiple calculi, filling more or less completely the pelvis and dilated calices, should either be left in situ or a nephrectomy considered, because we have very little to offer to prevent the reformation of calculi. Such a recurrence takes place in from 15 to 20 per cent. of all cases; hence we must give a guarded prognosis as to recurrence. The one positive indication for operations is when a single calculus blocks the outlet of the renal pelvis. We can employ the conservative operation of pyelotomy in nearly every case. I should like to emphasize the necessity of search for ureteral stricture or obstruction by an accessory vessel in every renal calculus case. In regard to the not infrequent concomitant occurrence of biliary and renal calculi, our experience agrees again with that of Dr. Nichols. Cholecystography and pyelography are indispensable aids in the differentiation of shadows due to biliary and renal calculi. Dr. Nichols' method, of using a 5 per cent. sodium iodid solution as a contrast medium in pyelography when the shadow is a very dense one and a more concentrated solution (12 per cent.) when the shadow is faint, is a very valuable contribution. It is easy to overlook calculi which give only a light shadow, and here the stronger solution often intensifies the shadow. We are able today, thanks to such methods as pyelography, to localize the shadow in respect to our plan of operation, whether it shall be a pyelotomy alone or a small nephrotomy, or the two combined. Much unnecessary injury to the kidney is thus prevented. Filling the pelvis and ureter with an opaque medium enables us to determine the degree of injury these structures have suffered and to understand why a calculus shadow can, at one sitting, be found in the renal pelvis and at the next one at the lower end of a greatly dilated ureter. These migrating calculi lead to many difficulties, unless a preoperative diagnosis has been made of the existence of marked dilatation of the ureter and the renal pelvis.

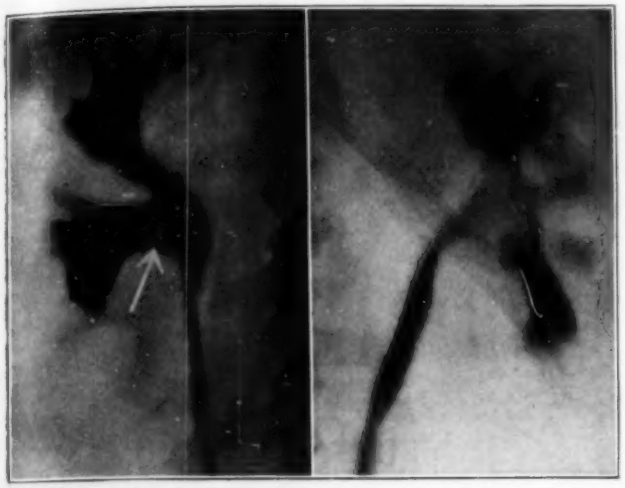


Fig. 9.—Two cases of kidney calculi, in each of which the stone was of approximately the same density as the surrounding tissue.

DR. HENRY K. PANCOAST, Philadelphia: I should like to ask Dr. Nichols whether he has had any experience with cases in which there was a stone on one side but pain on the opposite side. A few years ago this was considered possible in a definite percentage of cases. Now that our technic is so much improved, it is possible that this does not occur. Formerly we were missing a small stone on the pain side, or other procedures which now find some other lesion.

DR. EDWARD S. BLAINE, Chicago: I should like to ask Dr. Nichols whether he makes use of the lateral projection in the differentiation between gallstones and right kidney stones. An able presentation on the subject of gallstones by a British roentgenologist of large experience set forth forcibly this particular differential diagnostic procedure as being of greatest value. I should like to know whether Dr. Nichols uses it and if so whether he finds it of sufficient value to recommend it.

DR. DUDLEY MACKEY, Bloomfield, N. J.: We had a case of a kidney with three distinct pelvises. The first roentgenogram showed a large kidney. It was then decided to inject the kidney. Before injection three plates were made posterior and three anterior with no stone shadow in evidence. Care was used in the inspection of all plates to locate the shadow of the stone. Further examination showed a definite shadow but was not conclusive until the kidney was injected. By actual measurement of the shadow seen in the pyelogram, the stone was demonstrated. The other kidney in the same patient had two pelvises with distinct shadow suspicions of a stone, yet this was not positive until the pyelogram was made.

DR. B. H. NICHOLS, Cleveland: As to the treatment of bilateral stone in a child of 3 years, I think it would depend on what the urinary symptoms showed. That is rather a decision for the surgeon to make. Our youngest patient with bilateral stone was 5 years old. If there were no urinary symptoms, that is, no hematuria or pyuria, I think it would be safe to delay operation for a time. We make our gallbladder and kidney films at a rather short distance, so that the variation in the size in the two positions is increased. Answering Dr. Blaine's question, we have given up the lateral view because if the tube is not exactly over the shadow, it will be carried one way or the other, as it is a considerable distance to the plate and it is difficult to show a stone through the patient laterally. Dr. LeWald's point is well taken, that when one sees a deformity in the kidney pelvis it might be a small papilloma in the kidney, which would give a rounded shadow and would look like a kidney stone. One cannot make a positive diagnosis of stone, but in the majority of cases blood clots and deformities of the kidney pelvis will not be misleading because one will see that the shape of the shadow corresponds to the same type of branching that we see in stones, or unless one sees a definitely rounded stone. By the law of probability, stones occur more often than papillomas. In answer to Dr.

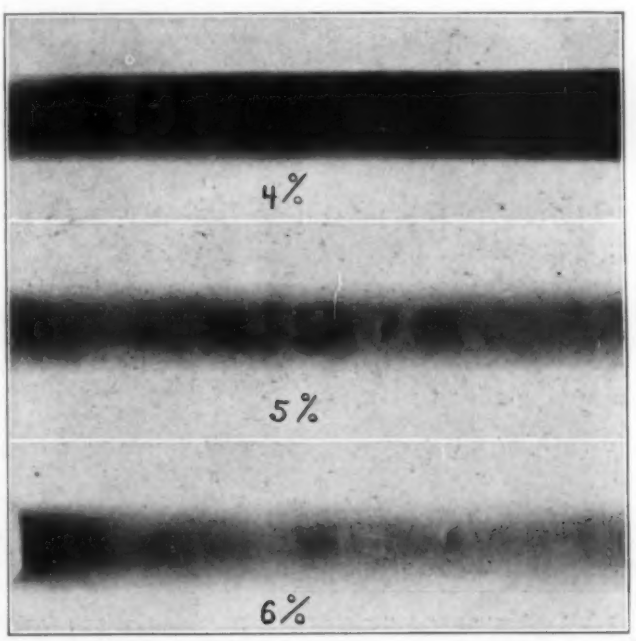



Fig. 10.—Water phantom study of calculi in sodium iodid solutions of varying densities.

Pancoast's question about pain on the opposite side, that is now, I think, almost negligible. Occasionally we see such a case, but it is of little importance, because the vast majority of patients with kidney stones have pain and tenderness on the side in which the stone is present.

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# ROENTGEN RAY IN THE DIAGNOSIS OF PERFORATED PEPTIC ULCER *

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AND
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Air, free in the peritoneal cavity, has long been considered a valuable sign in the diagnosis of perforations of the gastro-intestinal tract, but this important sign has not gained the popularity that it deserves because of the uncertainty with which its presence was formerly elicited by percussion, particularly when the air was present in small volume.

The possibility of demonstrating free intraperitoneal air by the roentgen ray suggested itself to us as a more accurate and reliable method than by percussion of the liver dulness. There was also the possibility that the air could be visualized at a much earlier stage after perforation than by the older method. A study of the literature on this subject revealed several brief references to the roentgen-ray detection of air in the peritoneal cavity, but no reports could be found in which

Fig. 1.—Spontaneous pneumoperitoneum between diaphragm, *A*, and upper surface of liver, *B*; *C*, horizontal fluid level.

the sign was studied in a large series of cases in relation to the incidence and time of appearance after the perforation occurred.

Cases of ruptured gastric and duodenal ulcers in which the intraperitoneal air was visualized with the roentgen ray were reported by B. Bager, H. Schottmüller, H. A. Dahm, W. Weiland, and H. Wessler and L. Jaches. These authors reported only one or two cases, and H. Assmann, who described four such instances, gives only scant attention to this sign. G. H. Copher recently reported a series of five cases of ruptured ulcer in which it was possible to visualize air in the peritoneal cavity. In a previous communication we reported a series of fifteen cases of proved acutely perforated gastric and duodenal ulcers, in thirteen of which free intraperitoneal air could be seen with the

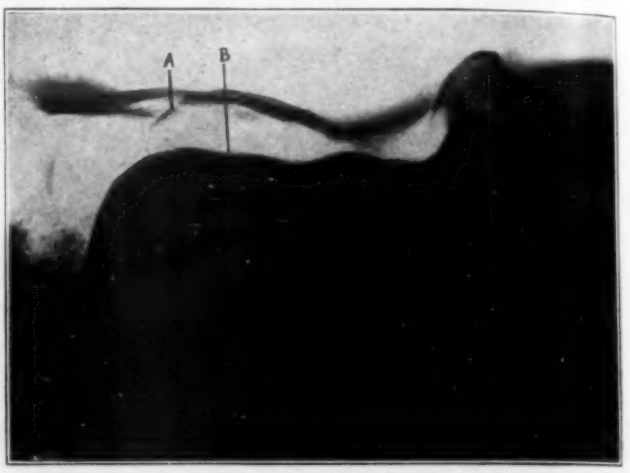


Fig. 2.—Patient on left side, showing free air between lateral wall of abdomen, right surface of liver, *B*, and diaphragm, *A*.

fluoroscope. This intra-abdominal air is not limited to perforated peptic ulcer but may occur after rupture anywhere in the gastro-intestinal tract. R. Reinecke reported a case of gangrenous appendicitis that had ruptured and that had resulted in subphrenic abscess in which free air was seen between the diaphragm and upper surface of the liver. This zone of air was seen in the foregoing location when the patient was in the upright position and disappeared when the posture of the patient was changed. L. Kenez found a similar picture after a perforation of a tuberculous ulcer of the small intestine, and a similar result was obtained by H. Popper after a rupture of the bowel.

These few reported observations in which free intraperitoneal air was found after perforations of the gastro-intestinal tract other than of the stomach or duodenum do not detract substantially from the value of the sign in perforated peptic ulcer, as all of the conditions in which the phenomenon was observed proved to be surgical emergencies demanding immediate operation. The practical importance of this sign lies in the fact that, while it may occur in any perforation of the gastro-intestinal tract, the vast majority of these perforations occur either in the stomach or in the duodenum. Our own observations include a number of cases of perforated appendicitis that were examined by fluoroscopy, but we were unable to observe free intraperitoneal air in any of them.

Our material consists of twenty-nine cases of acute perforation of gastric and duodenal ulcer, all of which were examined by fluoroscopy as well as by the other usual method before operation. All of them were proved to be perforated ulcer of the stomach or duodenum, either at operation or at necropsy. The method of fluoroscopic examination is very simple and requires no preparation or use of a contrast meal. The patient may remain on the hospital cart during the examination, and

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

the entire procedure need not take more than a few minutes. There is no danger or discomfort to the patient, no delay to the operation, and the information gained is well worth the effort exerted in eliciting this sign.

The visualization of the intraperitoneal air is possible in the early stages because the air seeks the highest point in the abdomen so that with the patient in the upright position, either sitting or standing, the air bubble will be observed between the under surface of the diaphragm and the upper surface of the liver. The same principle enables us to see the air between the outer surface of the liver and the right abdominal wall when the patient is on his left side, and between the spleen and the left abdominal wall when he is on his right side. We have been able to see the air bubble in the pelvis by placing the patient in the Trendelenburg position. It is not necessary, however, to turn the patient to all these positions, as one or two postures will be quite sufficient. We have found the dorsal and left lateral positions sufficient for diagnosis, and we have often employed the sitting posture without discomfort to the patient. It is frequently possible to detect a fluid level if both air and fluid are present, and a splashing may be detected if the patient is shaken. The origin of the air seen in the peritoneal cavity in these cases is from the stomach and comes from the gastric "air bubble" normally present in this organ. But little air, a few cubic centimeters, is all that is required to be visualized by the fluoroscope as it all tends to collect in one place. The fact that the air is free in the peritoneal cavity and the characteristic outline and location of this air may

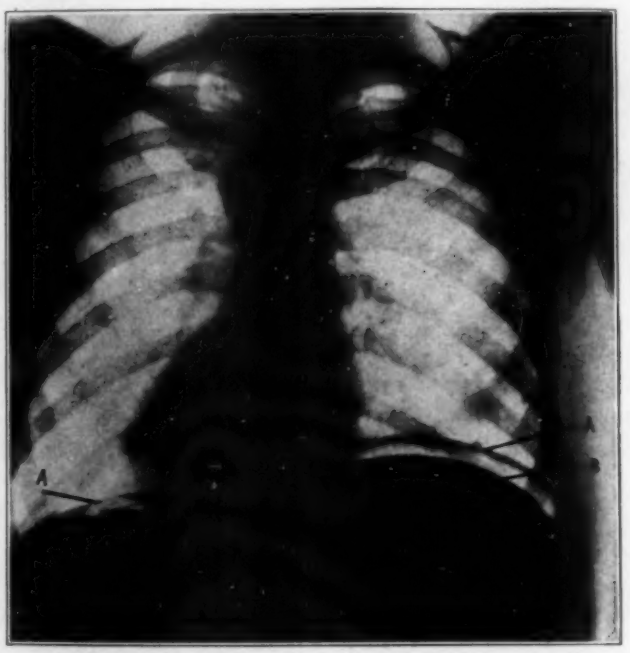


Fig. 3.—Patient in upright position, showing free air between diaphragm, *A*, and upper surface of liver, *B*, on right side, and between diaphragm and abdominal viscera on left side.

be determined by changing the position of the patient, when it will be observed that the air bubble shifts from its previous location to the highest point in the abdomen as determined by the new position.

The free air as described was seen in twenty-five of the twenty-nine cases so studied, or in 86.2 per cent. of our series. Most of the cases were of a few hours' standing, and one case showed a distinct air zone two hours after the occurrence of the perforation. The value of this sign lies, therefore, not only in the fact that it aids us to recognize acute perforation of a gastric or duodenal ulcer but also in that it enables us to make a very early diagnosis, thus permitting the surgeon to operate earlier and giving the patient a better chance for recovery.

## SUMMARY

1. Free air in the peritoneal cavity is pathognomonic of gastro-intestinal perforation and was found on

Fig. 4.—Patient in supine position, showing free air between anterior abdominal wall, *D*, coils of intestine, *E*, and fluid level, *C*.

fluoroscopic examination in 86.2 per cent. of a series of twenty-nine proved cases of acute perforation of gastric or duodenal ulcer.

2. This free air is easily seen on fluoroscopic examination without previous preparation or use of a contrast meal.

3. The sign appears in the earlier stages of perforation and was present two hours after the onset of the trouble in one of our cases.

4. The free air is recognized by observing a narrow, sickle shaped zone of freely shifting air between the viscera and the abdominal wall or between the diaphragm and the upper surface of the liver. The air changes location with change of posture of the patient.

5. The procedure is apparently without harm and does not produce discomfort to the patient. The information gained is easily worth the few minutes that it takes to examine the patient in the manner described.

6. The sign is not offered as a substitute for the diagnostic procedures usually done in these cases, as a diagnosis can be made in most instances on the history and physical examination. The sign is offered as a valuable addition to our diagnostic armamentarium in the recognition of acutely perforated gastric and duodenal ulcer, because it is practically pathognomonic.

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## ABSTRACT OF DISCUSSION

DR. JOHN D. DUNHAM, Columbus, Ohio: The speakers called attention to a very important addition to our methods of diagnosis. The interpretation of these methods offers difficulties in certain instances; for example, in paralytic ileus the differentiation of air within and outside the intestine would be somewhat difficult. There are objections in the way of interpretation that might be mentioned. One case in particular illustrates the point: A young woman was brought into the hospital with acute abdominal pain, some distention and a rigid abdomen. The history justified the conclusion that she had undoubtedly

rupture of one of the viscera of the stomach or of the duodenum. Free air in the peritoneal cavity was demonstrated by a roentgenogram. At the laparotomy, it was found that there was an opening in the uterus. A metal catheter had been used to produce abortion. A patient with symptoms of rupture from gastric or duodenal ulcer, when first seen by the physician, has usually been ill for some time. Further time must elapse before the patient reaches the hospital or the roentgenologist. The question arises as to whether this method of examination does not dangerously delay surgical intervention. Is it not true that change of posture is liable to introduce more than air into the abdominal cavity? The percentage of recoveries in the treatment of ruptured viscera depends on the speed with which operation is undertaken. It occurs to me that, unless a patient is seen within one or two hours after the onset of symptoms, the older methods of observation must be depended on, such as history taking, palpation and leukocyte count, in order that the patient may not be unduly held off from treatment.

DR. R. T. VAUGHAN, Chicago: We have already stated that operation is not delayed by this procedure. On the way from the ward to the operating room, the patient passes the roentgen-ray department, where he is run before the fluoroscope while still on the hospital cart. Not five minutes is required for this examination, whereas it takes our nurses usually from twenty to thirty minutes to get the operating room "set up" for an emergency operation. What do we do with the 15 per cent. of cases that show no gas bubble? In most of them, especially those with severe symptoms and well marked signs, the diagnosis can be made readily without the gas bubble, as it can, too, when the bubble is present. In some cases the diagnosis is made only by exploratory laparotomy, when the symptoms present justify no further preliminary diagnosis than an acute surgical condition of the abdomen. There are occasionally cases of perforation with still milder symptoms, and it is difficult or impossible to say whether they are surgical or nonsurgical at first examination. On three patients in whom one of the diagnostic possibilities considered was perforated ulcer, either very tiny or secondarily closed by omentum or food particle, I have tried a new procedure with a positive result in one case. As fluoroscopy showed no free gas bubble, on admission to the hospital the patient was put in the lateral position for several hours. In this position the gastric gas bubble lies in the pyloric portion of the stomach and all gastric fluid in the cardia and fundus. If a pyloric or duodenal perforation is present, only gas should escape from it, and the danger of leakage of fluid through the perforation should be minimal. After the lapse of eight hours, a tiny but unmistakable peritoneal gas bubble was discovered in this patient. Laparotomy was immediately performed, the tiny gastric perforation opening closed, and the patient saved. This patient's temperature was only a trifle over 99 F.; leukocyte count was 10,000; there was abdominal discomfort rather than actual pain, and there was only a suggestion of rigidity. The other two patients recovered without operation or a gas bubble being discovered, so that the exact diagnosis in their cases is not known.

**Rubber Gloves.**—The wearing of sterilized rubber gloves when operating is the greatest improvement in surgery since Lister discovered the cause of sepsis.—Sir John Bland-Sutton, President, Royal College of Surgeons of England.

# ADENOMATOSIS, OR THE DIFFUSE ADENOMATOUS GOITER *

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Under the term adenoma, there is described in the literature two definite distinct pathologic entities, adenomatosis, or the diffuse adenomatous goiter, and true adenoma, which is a definite encapsulated growth beginning from a single point and answering all the requirements of the benign tumors.

Adenomatosis of the thyroid is characterized by a diffuse new formation of acini usually involving the entire thyroid gland, beginning with the fetal type without secretion, but later assuming the adult or colloid type, and giving rise to no symptoms at first, but later to those of pure hyperthyroidism.

Wilson, in 1913, briefly described this condition and applied the term adenomatosis. Goetsch, in 1920 and 1921, described the early stage under the term diffuse adenomatosis, but referred to the new formation of acini as "an abortive attempt at the formation of young small alveoli." Plummer, in his writings, has grouped adenomatosis with the adenomas, treating them as a single entity. In addition to these references, I have referred to this condition in several communications, but up to the present there has been no description of the disease tracing it through its entire course.

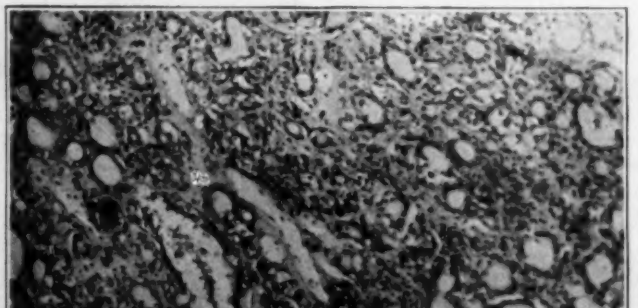

Fig. 1.—Early adenomatosis: thyroid only slightly enlarged, with no nodules; diffuse new formation of acini; fetal and adult acini present throughout thyroid.

## PATHOLOGY

The pathologic picture varies with the stage of the disease.

*Early Adenomatosis.*—The thyroid gland is moderately enlarged, the surface is smooth, and the consistency is somewhat increased over the normal. On section, the cut surface presents a more dense appearance than in the normal gland; and, while some colloid is present, there is not the same semitranslucent appearance characteristic of the normal thyroid. In the early stage the gland is homogeneous, and nowhere is there to be seen any tendency toward nodular formation. On microscopic examination (Fig. 1), it is found to contain both fetal acini and apparently normal or colloid acini. Between these two types of acini are found all possible variations, the appearance being indistinguishable from that of the mixed adenoma. In other fields there may be an apparent increase in the interstitial cells. In some areas these cells are arranged in masses, many of them showing the definite beginning of acinus formation. It was these areas that Goetsch referred to as being abortive attempts at the formation

* From the goiter clinic of the University of Oregon Medical School and the pathologic laboratory of Good Samaritan Hospital.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

of young small alveoli. A study of a series of cases, however, demonstrates that this is not an abortive attempt, but is instead the real beginning of the new acini.

*Late Adenomatosis.*—The gland shows a marked enlargement. The surface is more or less lobulated,

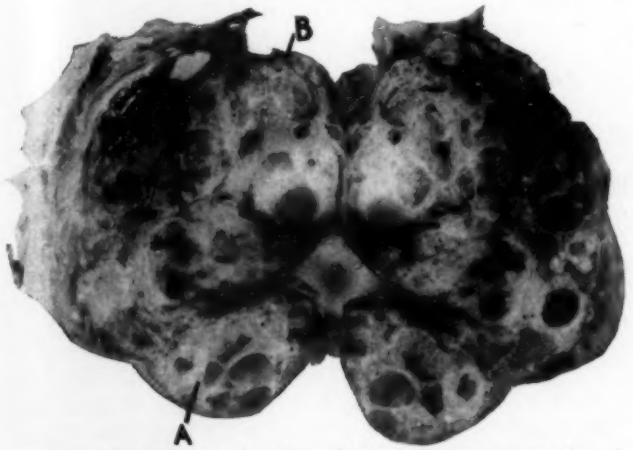


Fig. 2.—Adenomatosis: cut surface showing adenomatous nodules: *A*, unencapsulated nodules; *B*, nodule with thin capsule; to be contrasted with Figure 3.

often with very definite nodules projecting. On cut section (Fig. 2), the nodular arrangement is still more manifest. On close observation, these nodular masses are seen to be made up of groups of acini distended with colloid. Many of these masses have a thin, membranous capsule and can be enucleated, presenting an appearance not unlike that of an adenoma, but differing from an adenoma in that the capsule is only a thin membrane instead of the well developed capsule of the adenoma (Fig. 3). Between these nodules is found compressed thyroid tissue. In some places degeneration has taken place, while in other areas there may be marked connective tissue proliferation, marking the site of a former degenerative process or a hemorrhage. Sometimes cystic formation is present, while hemorrhagic areas, either into some of the nodules giving a sharply circumscribed hemorrhagic mass, or infiltrating between the nodules, may be found. On microscopic

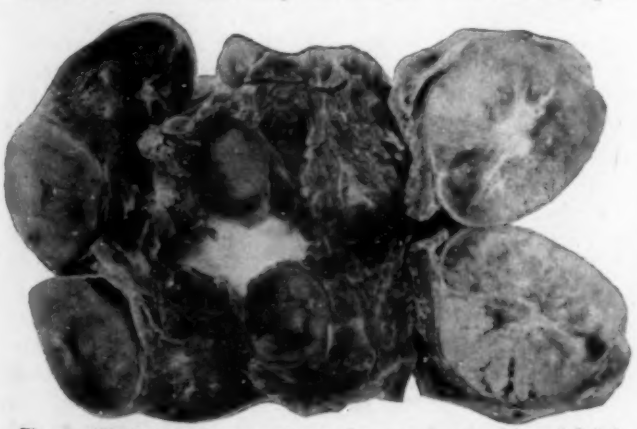

Fig. 3.—Multiple adenomas: three adenomas in one lobe; definitely encapsulated. Difference from Figure 2 may be noted.

examination of the colloid nodules, the picture is very similar to that seen in a colloid adenoma. Sections made from the tissue between the nodules often show the same type of structure, differing only in the amount of colloid present in the acini. Solitary lymph follicles may be found.

The blood supply in adenomatosis is increased, and in many cases there is a very definite increase in the collateral circulation.

### PATHOGENESIS

It is impossible to trace any one given thyroid gland through its course from the beginning new formation of acini to the development of colloid adenomatosis, but by studying a series of cases, the method of development can be fairly well ascertained. The very first evidence of the beginning of an adenomatosis is the formation of undifferentiated cells in masses (Fig. 4). These cells are probably identical with those described by Wölfler as interstitial cells. They do not differ from the appearance of the cells seen in the beginning of the development of new acini within old acini, as seen in compensatory hyperplasia (Fig. 5). Just as in well developed compensatory hyperplasia one sees in the center the undifferentiated cells, external to this the fetal acini, and next to the wall of the parent acini the colloid acini, so in adenomatosis (Fig. 6) one finds

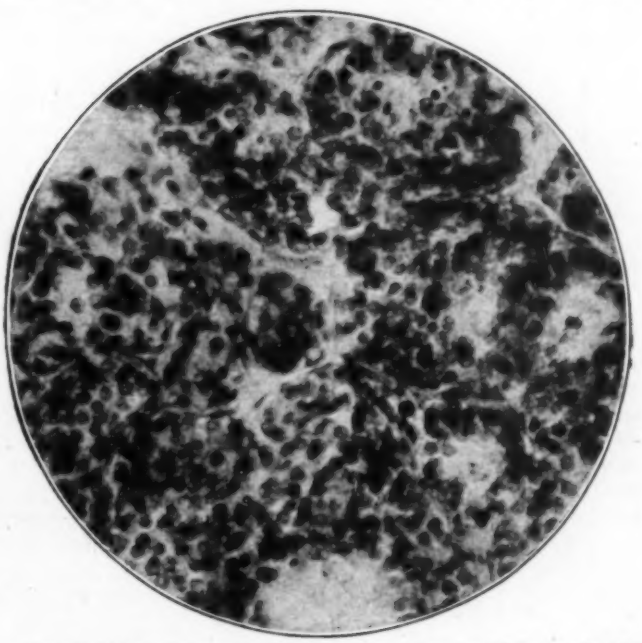

Fig. 4.—Adenomatosis, showing transition from undifferentiated cells to fetal acini.

first a group of the undifferentiated cells, then the newly formed acini of the fetal type, and then the acini that are taking on the power of secreting colloid. From this stage the process goes on to the stage at which the acini are overdistended with colloid. In some areas the development becomes more rapid, pushing the neighboring acini to one side, thus giving an appearance similar to that seen in adenomas, but differing in that there is either no capsule at all or usually only a thin membranous capsule. Sometimes there is a fairly definite capsule about some of the nodules, but rarely does it attain a thickness or appearance resembling that seen in the adenomas.

Taking the picture as a whole, it gives one the impression of a diffuse new acinous formation in which certain areas have developed more rapidly than others, thus producing the nodular effect.

The origin of the cells from which the new acini spring is not known. A study of a series of cases of adenomatosis suggests three different theories: (1) congenital; (2) origin from the Wölfler or inter-

stitial cells; (3) a hyperplasia of the cells lining the normal acini.

According to the first theory, either the acini are present at the time of birth, being an abnormal fetal development, or else there are present certain undifferentiated cells at birth not normally found in the thyroid

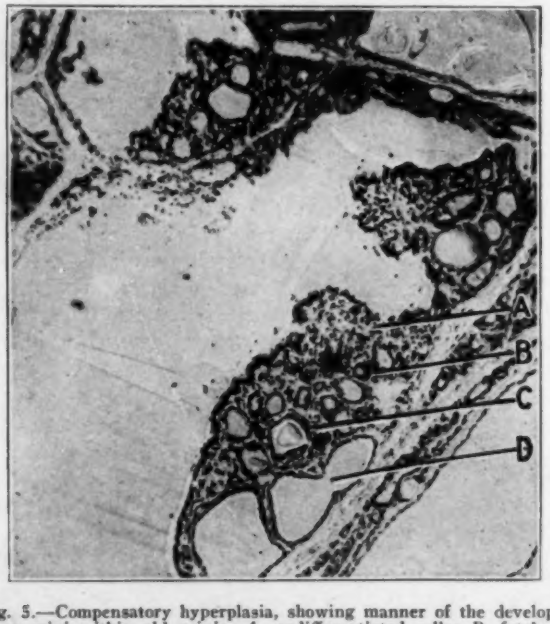


Fig. 5.—Compensatory hyperplasia, showing manner of the development of new acini within old acini: *A*, undifferentiated cells; *B*, fetal acini; *C*, intermediate cells; *D*, adult acini.

gland from which the acini develop. According to the second theory, the new acini form from the interstitial cells of Wölfler, which are normally found in the thyroid gland. The function of these cells is not definitely known, but it may be that they are for the purpose of regeneration in thyroids that have been partially destroyed or removed, or in thyroids secreting an insufficient amount of thyroxin. In other organs, the regenerative ability is usually present. In the liver, for example, where there has been a slow destruction of the liver lobules, as in cirrhosis, there is often a new development of liver substance in adenomatous-like masses sufficient to carry on the liver function so long as the blood supply is not interfered with. This new formation in the liver probably develops from the bile radicles. The thyroid gland, not having ducts through which the secretion may be discharged and from which regeneration may take place, may have instead the so-called interstitial cells for this purpose, and from these, according to this theory, may come a diffuse atypical acinous formation.

The third theory is that a new formation of acini similar to that seen in compensatory hyperplasia may develop from the cells lining the old acini, but outside the walls of these acini instead of inside, as in compensatory hyperplasia.

It would appear from the glands studied that the theory that these new acini develop from the interstitial cells was more tenable than any other theory; however, without the opportunity of studying a large number of thyroid glands of children or of the age of adolescence, one cannot be certain that there may not be some which show the characteristic findings of adenomatosis from birth. Accepting the theory of the development from the interstitial cells as being correct, the source of the interstitial cells is the next problem in pathogenesis. These may be congenital, put there for the purpose of regeneration, as stated, or it may be that they spring from the epithelial cells of the acini.

## ETIOLOGY

Three theories of causation are apparent: (1) that it is congenital; (2) that it develops from uncured adolescent goiter; (3) that it is developed as the result of a stimulus from the mild hypothyroidism due to iodin deficiency in the food and drink intake.

1. The congenital theory has already been discussed under pathogenesis.

2. The patients having adenomatosis that I have seen may be divided into three groups so far as a history of adolescent goiter is concerned. The first group, by far the largest, gives a history of having had an adolescent goiter. The second group is uncertain whether a goiter was present or not during the adolescent period, and the third group, which is the smallest, is certain that there was not a goiter; but many if not all of these patients may be mistaken. The adolescent goiter probably leaves the thyroid in a somewhat atypical state with a reduced reserve, so that when increased demand is thrown on the thyroid gland in later life the changes characteristic of adenomatosis take place. Patients with other forms of goiter in adult life gave the same history regarding adolescent goiter; hence, it appears probable that an uncured adolescent goiter may predispose to the development of all types of adult goiter.

3. It is known that mild hypothyroidism due to a deficient iodin intake may result in: (1) an oversecretion of colloid, for the thyroid in its attempt to secrete more thyroxin may secrete too much colloid; (2) a hyperplasia of the cells within the acini, as seen in hyperplastic adolescent goiters, in which the hyperplasia may be either diffuse or localized and in the latter

Fig. 6.—Adenomatosis: *A*, undifferentiated cells; *B*, beginning fetal acinus formation; *C*, intermediate acini; *D*, adult acini.

case often mistaken for adenomas, and (3) the new formation of acini, as seen in compensatory hyperplasia. To summarize our knowledge of the etiology, it would seem that a simple nontoxic goiter, as the goiter of childhood, the adolescent goiter, or the colloid goiter of adult life, but more especially the adolescent

goiter, predispose to the development of adenomatosis, and that an iodin deficiency in the food intake is an important factor.

SYMPTOMATOLOGY

Early in the development of this disease, the only evidence of the presence of an adenomatosis is a slight enlargement of the thyroid gland. It is probable that considerable time elapses between the beginning of the adenomatosis and the beginning of the symptoms in those that become toxic, the same as occurs in true adenomas. The onset of the symptoms is insidious, so that the patient does not come seeking treatment until the symptomatology has become fairly definite. At this time the most frequent complaints are tiring easily, nervousness, shortness of breath, tachycardia and palpitation. The appetite is usually very good, while the weight is variable, some patients losing and others having no change. There is never a history of acute symptoms as seen in exophthalmic goiter. The most common clinical findings are tachycardia, tremor, moderate rise in the basal metabolic rate, moist skin and palms. The size, shape and consistency of the thyroid vary with the stage of the disease.

Early the gland is only moderately enlarged and smooth; later it may be markedly enlarged and nodular. The largest goiters that we have seen belonged to this type. Increase in the systolic pressure occurs, followed gradually by an increase in the diastolic. The blood pressure of adenomatosis, like that in toxic adenomas and compensatory hyperplasia, differs from that in exophthalmic goiter in that the diastolic pressure is usually not lowered or, if lowered, is lowered but slightly, while the systolic pressure rises, thus giving an increase in the pulse pressure characteristic of toxic goiter. With the development of tachycardia and hypertension, cardiac hypertrophy takes place.

DIAGNOSIS

The diagnosis of hyperthyroidism is made on the history of tachycardia and palpitation, increased nervousness, tiring easily, increased sweating, increased pulse pressure accompanying a tachycardia, and an increase of the basal metabolic rate. The differential diagnosis between adenomatosis and toxic hyperplastic (exophthalmic) goiter is made, first, on the history and, secondly on the clinical symptoms. In adenomatosis there is usually a history of a goiter having existed for a considerable time. The onset of the symptoms is insidious. The most common complaints are tachycardia, palpitation, tiring easily and getting out of breath easily. There is a good appetite and usually little disturbance with the weight, unless the patient is seen late in the disease. On physical examination, the goiter is found to be small and smooth and fairly firm early in the disease, and large, soft and lobulated late in the disease. There is an increase in pulse pressure resulting from a rise in the systolic pressure as a late sign. The diastolic pressure rises late in the disease but does not keep pace with the rise of the systolic pressure. Tremor is present. There is no exophthalmos, lagging of the upper lids, or hyperthyroid crisis. The basal metabolic rate is moderately increased, being found usually between a plus 30 and a plus 50.

In the toxic hyperplastic goiter (exophthalmic) as seen in the first attack, there is a definite tachycardia with fibrillation in the extreme cases, well marked tremor, evidence of a loss of weight, and lagging of the upper lids, with exophthalmos in the majority of patients. The skin is always moist, and the palms are sweaty. The patients give a history of being warm without a rise in temperature. Many of them want the living room cooler than other members of the family, and fewer covers at night. In a well marked attack, the basal metabolic rate is fairly high, usually 50 or more. The patients are usually nervous, and many of them talk rapidly. In secondary attacks, the findings are not so definite. There is an increase in the pulse pressure, resulting from a lowering of the diastolic, rather than to a raising of the systolic pressure. The systolic pressure may be normal, below normal or occasionally above normal. The diastolic pressure is rarely above normal.

A differential diagnosis between adenomatosis and toxic adenoma must be made by palpitation of the thyroid, as the clinical manifestations are the same. In the adenomas, there is one or at most two or three definitely isolated nodules. In adenomatosis, at first the gland shows only a diffuse enlargement without any nodular formations. Later the gland presents a lobulated sensation to the examining fingers instead of the definite isolated nodules of adenomas. In some instances in which there has been a rapid development in some areas there may be fairly definite nodules, but these are always accompanied by a more or less lobulated gland.

PROGNOSIS

The prognosis varies with the intensity of the disease and the length of time elapsing after the toxic symptoms develop. The prognosis of cure with proper treatment so far as the hyperthyroidism is concerned is usually good. Early in the disease a good prognosis for the relief of symptoms may be given, but after definite cardiac hypertrophy has developed, after definite hypertension has been established, and after the patient has become distinctly nervous, the prognosis, so far as relief from symptoms is concerned, becomes less favorable.

In the cases showing a marked hypertension, there is practically always a reduction in the blood pressure following operation, but it usually does not go entirely back to normal. A damaged heart muscle remains a damaged heart muscle. A badly disordered nervous system resulting from a prolonged or a pronounced hyperthyroidism may not become entirely normal again. To give a good prognosis, the proper treatment must be instituted early.

TREATMENT

A cure can be obtained in only one way; that is, early adequate removal of thyroid substance. Like all patients with hyperthyroidism, each patient must be carefully studied in order to determine the treatment for that individual. Patients seen fairly early will stand the radical operation well. It has been our experience that because of the increased collateral circulation, ligation of the superior thyroid poles is of little value. Patients in whom the condition is moderately severe are put in bed for a few days previous to operation with an ice collar about the neck, sufficient sedatives, barbital or morphin, to keep them quiet, and digalen, 10 minims (0.6 c.c.) intravenously or intramuscularly every four hours if the pulse is over 120. In the severe cases we use the roentgen ray rather than superior pole ligation to decrease the activity of the thyroid in order to make the patient a safe risk. On the night before the operation, the patients are always given barbital or morphin. There is no preoperative preparation. The patient's rest is not disturbed, even

by giving an enema on the morning of operation. If the patient is found excessively apprehensive or nervous, the operation is postponed.

The operation must be a subtotal double lobectomy. We leave only the posterior capsule and a thin layer of thyroid gland adherent to it. If more is left there is danger of recurrence. It is possible with this type of operation that there may be an occasional patient who will show the evidence of hypothyroidism for a short time, but we have never seen such a case. With a careful study of each individual case and with the proper preliminary preparation of the patient, there should be only a very slight mortality.

### CONCLUSIONS

1. Adenomatosis is a definite pathologic entity differing from adenoma in that the process is diffuse and does not have a true capsule.
2. Adenomatosis produces a hyperthyroidism of the cardiovascular type.
3. It is important to differentiate between adenoma and adenomatosis because the former requires simple enucleation of the tumor growth, while the latter requires subtotal double lobectomy.

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# PRESENT-DAY SURGICAL TREATMENT OF DISEASES OF THE THYROID GLAND*

JOHN DE J. PEMBERTON, M.D.
ROCHESTER, MINN.

In 1866, Samuel D. Gross [1] said:

> When the tumor resists our curative efforts and endangers suffocation, it has been proposed to afford relief by extirpation, but the question arises, is such a procedure proper or justifiable? In a word, can the thyroid, when in a state of enlargement, be removed with a reasonable hope of saving the patient? Experience emphatically answers, "No." . . . No honest and sensible surgeon, it seems to me, would ever engage in it.

Since this declaration there has been prodigious progress in the field of surgery, and probably in no branch has the advance been greater, more rapid or more secure than in that dealing with diseases of the thyroid gland. To have reduced the operative mortality in a period of less than seventy years from a state of prohibitive operative hazard to barely 0.5 per cent. is a record of surgical achievement worthy of just pride.

The evolution of surgical treatment of the thyroid gland has proceeded along two main lines: the perfection of the technic of the operation, and the control of hyperthyroid cases.

From the knowledge revealed by the discovery of the parathyroid bodies and their function, and by the discovery that myxedema resulted from the loss of function of the thyroid gland, through the efforts of many surgeons, notably Billroth, Kocher, Mikulicz, Halsted,[2] C. H. Mayo and Crile, the operative technic was developed and standardized. The perfection of the technic resulted in practically eliminating the danger of operating on goiters without hyperthyroidism. In the Mayo Clinic in the year 1924 there was not a single death following 667 subtotal thyroidectomies in 667 cases of simple goiter.

However, the perfection of the technic solved only part of the problem of surgical treatment of goiter with hyperthyroidism, for in this type of goiter are the additional operative hazards of acute hyperthyroidism and the debility of the patient incident to hyperthyroidism or to the presence of visceral degeneration, which in the past have too often marred the success of the technically flawless operation.

The demonstration by Plummer that "toxic" goiter occurs as two distinct entities, exophthalmic goiter and adenomatous goiter with hyperthyroidism, was not only of academic interest but also of fundamental importance in paving the way for a more rational method of treatment. The additional operative hazards in the two are the same, but each disease had to be attacked along entirely different lines.

### EXOPHTHALMIC GOITER

Formerly, the most baffling and discouraging problem in the management of exophthalmic goiter was the frequent occurrence of postoperative hyperthyroid crises. Although many measures have been advocated to check the progress of the reaction when once induced, not one has proved effectual. Fortunately, it was early recognized that hope lay in prevention, and efforts were directed at means of reducing the intensity of the hyperthyroidism and of affording protection to the patient. Thus, it was learned that during certain phases, when the degree of hyperthyroidism is greatest, by substituting minor surgical procedures, such as ligation, at a diminished hazard, the condition of the patient could be so greatly improved thereby that the thyroid gland could be resected later without the risk of an acute reaction. For the same purpose the operation might be divided into many stages. Other means advocated for the rehabilitation of the patient included the application of roentgen rays and radium to the thyroid and thymus glands, injection into the thyroid gland of boiling water and various drugs, such as phenol (carbolic acid) and iodin, and the employment of general measures of rest, high calory diet, forced fluids and the like. Likewise, there were developed numerous refinements in surgical management, comprising chiefly the avoidance of prolonged general anesthesia and the use of special types of anesthetics, the preoperative administration of drugs, such as morphin and scopolamin, and the performance of the operation in the patient's bed, all designed for the protection of the patient.

This advance in the management of patients with exophthalmic goiter had an important and far-reaching effect on the surgical treatment of goiter. Up to this time the relatively high operative risk deterred many patients with exophthalmic goiter from submitting to operation until other methods of treatment had been tried without success, that is, until late in the course of the disease, after the development of visceral degeneration, which in turn definitely handicapped the surgical treatment of exophthalmic goiter by increasing the operative hazard and by diminishing the chance for complete cure. With increasing knowledge of the disease, by the employment of preliminary surgical procedures, and by better care of the patient, the operative mortality was gradually lowered to a point nearly comparable to similar surgical procedures of equal magnitude, so that patients with exophthalmic goiter began to seek surgical treatment before the dis-

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* From the Division of Surgery, Mayo Clinic.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Gross, S. D.: A System of Surgery, Ed. 4, Philadelphia, H. C. Lea 2:394, 1866.
2. Halsted, W. S.: The Operative Story of Goiter, Johns Hopkins Hosp. Rep. 19:72-258, 1920.

ease had wrought permanent damage. Thus, one of the additional operative risks was partially removed by the patient.

While the results obtained by the perfection of this method of management must be considered a great victory, and at once gave to surgery the leading rôle in the treatment of exophthalmic goiter, there remained several obvious disadvantages and failures in the method itself. In the first place, the method did not completely eliminate the danger of acute postoperative crises, as occasionally and often unexpectedly a death attributable to this cause would quickly supervene on a minor procedure, such as ligation or injection of hot water into the gland. In the second place, it imposed a definite restriction on the operability, as a certain proportion of the patients who have had ligations and are allowed to go home for a period of restoration do not return for the completion of the operation. There are three chief reasons for their not returning: 1. In certain cases, the ligations may fail to check the progress of the disease and the patient dies. 2. In other cases, the improvement is so marked that the patient does not consider the necessity for further surgical treatment until after several relapses, when he has lost the benefit of an early operation. 3. In still others, the patients do not return for financial or other reasons. There are, also, a group of patients admitted in a state of crisis, who die before they can be prepared for operation. Finally, from the standpoint of the patient's comfort and mental strain, not to mention the economic loss, the disadvantages of multiple operations are obvious.

In the Mayo Clinic in March, 1922, Plummer [3] instituted the administration of compound tincture of iodin (Lugol's solution) to patients with exophthalmic goiter under preparation for surgical treatment. Previous to this, the general conception of the nature of the hyperthyroidism in exophthalmic goiter was that the body tissues were saturated with iodin elaborated by the thyroid gland. Hyperthyroidism and hyperiodism were spoken of synonymously, and so the administration of iodin to patients with exophthalmic goiter had seemed definitely contraindicated.

The action of iodin in a case of exophthalmic goiter is not definitely known, but the following is supposed to be the basis: The syndrome of adenomatous goiter with hyperthyroidism is the result of an excessive amount of thyroxin in the tissues, and it can be produced experimentally by the feeding of excessive amounts of thyroid extract or thyroxin to myxedematous patients. In short, adenomatous goiter with hyperthyroidism is pure hyperthyroidism.

In exophthalmic goiter there is the same syndrome with certain additional characteristic symptoms, such as exophthalmos, nervous and gastro-intestinal phenomena, and a tendency toward spontaneous crises. The cause of exophthalmic goiter is not known. Plummer suggests, as an explanation of the development of the characteristic features, that intensive stimulation of unknown source, acting on the entire gland, drives it to the point of producing an active agent, abnormal in quality as well as quantity, which in the tissues of the body causes all the phenomena of the disease. As the normal molecule of thyroxin, discovered in 1914 by Kendall, contains 65 per cent. by weight of iodin, it was natural to speculate as to the possibility of an incompletely iodized molecule, and Plummer conceived the theory that the syndrome of exophthalmic goiter varies with the total amount of a completely iodized molecule, and with the relative amount of the two molecules in the tissues. Iodin is therefore administered on the theory that it will completely iodize the molecule thyroxin.

At first the iodin was used only in selected cases, and administered continuously for short intervals in small doses of from 5 to 10 minims (0.3 to 0.6 c.c.) a day. In most instances clinical improvement and lowered basal metabolic rates were noted, and its value in the preoperative preparation of patients with exophthalmic goiter was early proved; then all patients with exophthalmic goiter were placed under this regimen. There remained the establishment of proper dosage. Occasionally, in the earlier experience, patients who had had iodin preoperatively had marked postoperative reactions, and from a study of these it was learned that the dosage had to be increased and administration prolonged to include not only the day of operation but the immediate convalescing period as well. For the last eighteen months or two years, there has been no noteworthy change in its administration. The dosage is adapted to the patient. The minimal dosage in the milder cases is 10 minims once or twice a day for five days; the average is 10 minims three times a day for from seven to ten days, and the maximal, for patients in a crisis or intensely stimulated on admission, from 60 to 100 minims (3.7 to 6 c.c.) daily until the crisis has subsided. After the crisis, 10 minims is given three times a day for from ten to twenty-one days or longer, depending on the severity of the case and the rapidity of the improvement.

The clinical effect of administering iodin to patients with exophthalmic goiter who are being prepared for operation has been striking. An early change is manifested by loss of conscious nervous tension and stare, and improvement in appetite and ability to sleep. In a few days to a week, the pulse and basal metabolic rates drop, often 30 or 40 points each, and shortly there is an appreciable gain in strength and weight. The improvement is not equal in all patients. In general, the more toxic the patient, that is, the more pronounced the cerebral stimulation and gastro-intestinal irritation, the more extraordinary is the improvement. In the milder cases the benefit is less apparent, and in a small group, with the hard, "trained" goiter of long duration, very little measurable improvement is noted on the administration of iodin. From a study of the course of the disease following ligation when large doses of iodin were administered continuously for long periods, Boothby [4] concluded that, after the marked initial improvement due to the iodin, the condition of the patient becomes relatively stable and no further improvement occurs. Repeated observations on the effect of the iodin administered continuously for a year or longer have confirmed this conclusion, so there is no rational basis for administering iodin in cases of exophthalmic goiter with the expectation of curing the disease.

The preoperative administration of iodin to patients with exophthalmic goiter has a definite and nearly constant effect on the pathologic picture of the thyroid gland. According to Broders, who has had the opportunity to study many hundreds of specimens, the histologic alterations are often diffuse and characterized

3. Plummer, H. S., and Boothby, W. M.: The Value of Iodin in Exophthalmic Goiter, J. Iowa M. S., **14**: 66-73 (Feb.) 1924.

4. Boothby, W. M.: The Use of Iodin in Exophthalmic Goiter, Endocrinology **8**: 727-745 (Nov.) 1924; Iodin in the Prevention and Treatment of Goiter, J. Indiana M. A. **18**: 5-8, 1924.

chiefly by dilatation of the follicles, presenting a "Swiss cheese" effect, a change in the lining epithelium from columnar to cuboidal and even to flat cells, and an increased deposit and thinning of the colloid material.

This method of preoperative preparation has had a remarkable and gratifying influence on the results of the surgical treatment of exophthalmic goiter. This cannot be accounted for entirely by the apparent improvement in the condition of the patient or by the lowering of the metabolism, for in the past many patients died after a simple ligation, whose appraisable symptoms had a much better rating than those who now after treatment go through a subtotal thyroidectomy without any reaction.

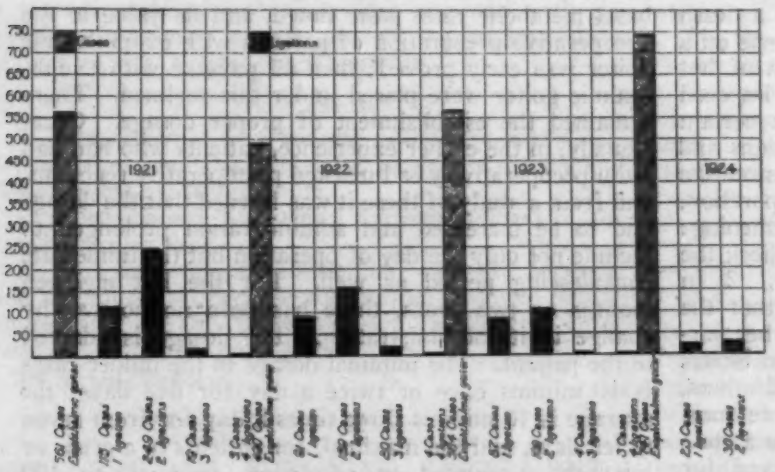


Chart 1.—Yearly cases and yearly ligations.

There is a certain phase or status in the course of the disease which, when present, increases the liability to an explosive hyperthyroid reaction, induced often by a trivial stimulus, such as a minor operative procedure or even great excitement. In many instances this status is manifested by intense mental and nervous stimulation or depression and a tendency toward gastro-intestinal upsets, whereas in other instances there are no reliable indications of it, and its presence is not known until the development of the explosion. It is more often associated with high basal metabolism than with a relatively low metabolism. By proper preoperative preparation with iodin, this phase of the disease may be completely dissipated, thereby eliminating the postoperative hyperthyroid crises, so that today the operative treatment of patients with exophthalmic goiter is rid of its greatest hazard, that most feared complication which formerly was potentially ever present to rob the surgeon of the fruits of his labor. However, it should be recognized that in the surgical treatment of exophthalmic goiter there is, besides the danger of the acute postoperative reaction, another hazard, the debility of the patient incident to the acuteness of the disease, or the result of visceral damage. If the latter is marked, the amelioration of the symptoms of hyperthyroidism by iodin treatment will not immediately remove this hazard; therefore, sufficient time should be allowed for the restoration of the patient's strength and weight before major surgical measures are advised.

The degree or intensity of hyperthyroidism should not be the sole criterion on which to base the decision for operation; consideration of the patient's general condition is equally essential. Even if iodin is administered, ligation of the thyroid arteries and a two months' convalescent period may also be indicated in the management of the most severe cases. It is apparent, then, that cautious judgment must still be exercised as to the selection of the time and type of operation for the individual patient. When these precautions are not observed in the management of the greatly debilitated patient, the convalescence may be complicated by the development of pulmonary disorders, congestion, edema and pneumonia, or by infections, such as pericarditis, pleurisy and arthritis, or by general metabolic disturbances.

### EFFECTS OF PREOPERATIVE PREPARATION WITH IODIN IN CASES OF EXOPHTHALMIC GOITER

The convalescent period has been materially shortened by the elimination of marked postoperative reaction, so that today the postoperative hospitalization period for patients with exophthalmic goiter is about equal to that of patients with adenomatous goiter without hyperthyroidism. There has been a steady and spectacular decrease in the number of multiple operations with increasing experience with this method [5] (Charts 1 and 2). The proportion of ligations performed at the clinic in 1924, to those performed in 1921, before the introduction of iodin treatment, was 1:11. It can be readily appreciated that the economic advantage to the patient effected by the reduction in the number of ligations has been tremendous. The operability of patients with exophthalmic goiter has been materially extended, as shown by an analysis of the records.

Every year at the Mayo Clinic there are a number of patients with exophthalmic goiter who are in a state of actual hyperthyroid crisis when they are examined, or who develop it shortly thereafter before operation.

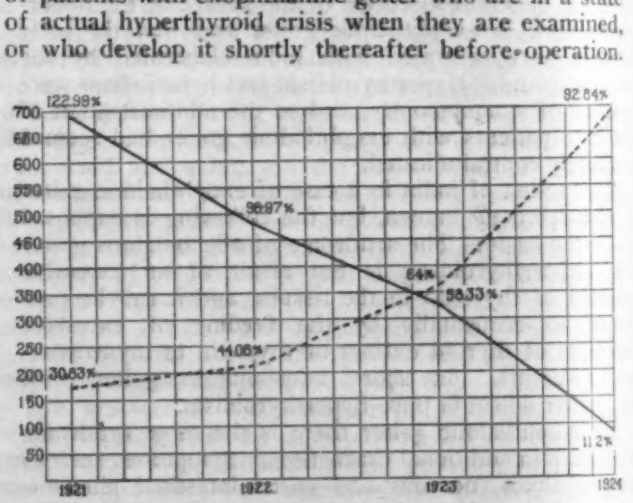


Chart 2.—Increase in percentages and numbers of primary thyroidectomies (broken line) and decrease in percentages and numbers of ligations (solid line).

A certain proportion of these die before operation. The average yearly deaths of patients not operated on for the four years preceding the introduction of iodin was more than fourteen (Chart 3). In 1924, the proportion of these dangerously sick patients admitted was as great as in preceding years, but only two died, and the others improved so much after the treatment with iodin that they were soon accepted for operation, thereby materially extending the operability to a class of patients

5. The use of iodin was begun in March, 1922.

who had previously died in a crisis on the medical service. Furthermore, of the patients who are allowed to go home for a period of rest after ligation, a certain number, for various reasons, do not return for the completion of the operation. Sufficient data are not available to classify these according to the causes for failure to return. My experience with patients who are temporarily very much benefited by the ligation is that there is a very high percentage of recrudescences. With the diminution in the number of ligations, the number of uncompleted operations in 1923 decreased to less than half (Chart 4). The data available for 1924 would indicate a further diminution in the number of uncompleted operations.

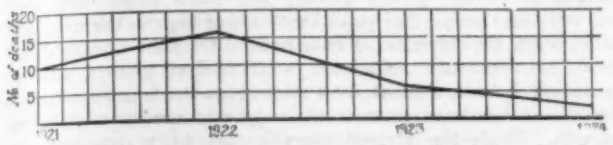

Chart 3.—Nonoperative deaths in cases of exophthalmic goiter from 1921 to 1924.

The operative mortality has also been substantially lowered. Thus, for the year 1924 the rate was 0.6 per cent. by operation and 0.8 per cent. by case. It is notable that there were no deaths from preliminary surgical procedures, and furthermore, only one death resulted from an acute postoperative reaction. In this case the goiter was wrongly diagnosed as adenomatous goiter with hyperthyroidism, and no iodin given preoperatively.

### ADENOMATOUS GOITER WITH HYPERTHYROIDISM

In order to reduce the mortality in cases of adenomatous goiter with hyperthyroidism, the management must be directed along entirely different lines. The patients in this group might be called the "procrastinating type"; that is, in most instances they do not seek medical relief until the disease has progressed so far that vital structures have been damaged, often beyond repair. We are all familiar with the patient who has had a nodular goiter for many years, but does not consider operation unless by chance the goiter causes choking or marked disfigurement. On an average of fifteen years after the appearance of the goiter, hyperthyroidism develops, but the onset of the symptoms is so mild and insidious that the patient often does not realize any change in his condition and hence does not seek surgical relief until evidence of visceral degeneration has developed, when the operative risk is high and the prospect of complete cure diminished.

Unlike exophthalmic goiter, the course of the disease is steadily progressive and, unfortunately, is not greatly influenced by any preparatory surgical or medical measures. Obviously, the operative mortality is in direct proportion to the number of bad risk cases accepted for operation. Therefore, the mode of attack to reduce the mortality and invalidism caused by this disease lies not so much in the further development of surgical technic or preparatory measures, as in the general education of the public. All nodular goiters should be removed soon after their onset, or the patients should be under periodic medical observation, so that the symptoms of hyperthyroidism may be detected early. As the successful removal of the adenomatous tissue results in the permanent disappearance of the hyperthyroidism within from ten to fourteen days, thereby lifting an extra load from the already disabled organism, the surgical treatment of practically all patients with hyperfunctioning adenomatous goiter, without undue regard to the operative hazard, is amply justified.

In the Mayo Clinic during the year 1924, 370 subtotal thyroidectomies were performed in 370 cases of adenomatous goiter with hyperthyroidism. Four patients died, a mortality of 1.08 per cent.

*Surgical Treatment of Thyroid Gland at Mayo Clinic, 1924*

| | Cases | Mortality* | Per Cent. |
|---|---|---|---|
| Goiters not associated with hyperthyroidism. | 677 | .. | .... |
| Subtotal thyroidectomies for nonmalignant goiters | 645 | .. | .... |
| Subtotal thyroidectomies for malignant goiters | 22 | .. | .... |
| Excision of specimen, and radium for malignant goiters | 10 | .. | .... |
| Adenomatous goiters with hyperthyroidism: thyroidectomy | 363 | 4 | 1.08 |
| Operations on exophthalmic goiters | 878 | 6 | 0.68 |
| Primary | 678 | 6 | 0.88 |
| Returns† | 63 | .. | .... |
| Total | 741 | 6 | 0.80 |
| Thyroidectomies‡ | 745 | 6 | 0.80 |
| Ligations | 83 | .. | .... |
| Hot water injections | 50 | .. | .... |
| Total number of cases with and without hyperthyroidism | 1,725 | 10 | 0.58 |
| Total operations in cases with and without hyperthyroidism | 1,928 | 10 | 0.51 |

* Patients who died in the hospital irrespective of duration of illness or cause of death.

† Minor operations on the thyroid gland had been performed previously in the clinic.

‡ "Complete" operation in one-stage, except in eight cases in which the technical difficulties necessitated a two-stage procedure.

### SUMMARY

In the Mayo Clinic, in 1924, there were 1,928 operations on 1,725 patients with goiter. Ten patients died, a mortality by operation of 0.51 per cent. and by case of 0.58 per cent. There were 677 patients with goiter unassociated with hyperthyroidism, with no deaths; 368 patients with hyperfunctioning adenomatous goiter, with four deaths (1.08 per cent.), and 741 patients with exophthalmic goiter, with six deaths (0.8 per cent).

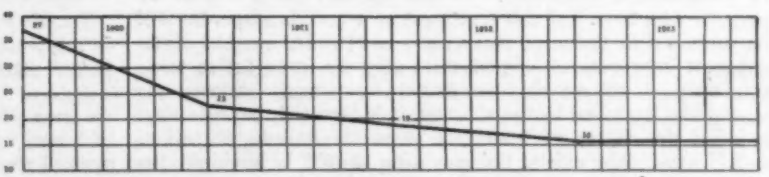

Chart 4.—Number of patients on whom ligation was performed and who did not return for thyroidectomy.

This extremely low mortality rate achieved by present-day surgical treatment of the thyroid gland was made possible by the perfection of operative technic and the discovery of means of controlling hyperthyroid crises. The employment of the multiple-stage operation in selected cases,, and refinements in management designed for the protection of the patient resulted in a tremendous reduction in the operative mortality and served to establish firmly the surgical treatment of exophthalmic goiter. However, on account of the failure to eliminate the hyperthyroid crises completely, and because of the obvious objections to the multiple-stage operation, this method left much to be desired. The proper administration of iodin to patients with exophthalmic goiter has completely controlled both the spontaneous and the postoperative hyperthyroid crises.

The influence of iodin on the surgical treatment of exophthalmic goiter is shown by the following clearly proved facts: 1. The convalescent period has been definitely shortened. 2. The necessity for multiple operations has been greatly decreased. 3. The limits of operability have been widened. 4. The mortality has been further reduced.

The problem presented by the patient with hyperfunctioning adenomatous goiter is one of procrastination, and the hope of its solution lies in the education of the public to the fact that all nodular goiters are potentially dangerous and should be removed unless the patient is kept under periodic medical observation.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. ELSE AND PEMBERTON

DR. FRANK H. LAHEY, BOSTON: During the last six months, we have been interested in our clinic in the iodin content of various types of glands and the effect of iodin feeding on the histologic picture. While the histologic picture shows the change of complete involution under thyroid feeding, it is a clinical fact that this picture does not go hand in hand with thyroid function. Time and again, the histologic picture indicates that the patient was not toxic, while in reality he is still toxic and can be cured finally only by subtotal thyroidectomy. It is the duty of all who deal with patients with disease of the thyroid firmly to impress on the public that iodin is not a method of cure in exophthalmic goiter, but a method of preparing patients for operation. We rarely see such patients today who have not been on iodin feeding, and this is at times confusing, particularly in borderline cases, which are difficult enough to diagnose in the first place and are made more difficult by the administration of iodin. Medical practitioners should be urged not to administer iodin to patients before sending them to the surgeon. They should be turned over to him for iodin administration, permitting him to note its effect, to observe the patient and his degree of toxicity before the iodin is administered, and to see borderline cases unchanged by iodin feeding. Up to within the last year I have been skeptical of the value of iodin, but I wish to acknowledge to Dr. Plummer a debt of gratitude for the popularization of this very valuable method in preparation for operation. In dealing with patients with severe thyroid disease, one must bear in mind that even though compound solution of iodin markedly improves them, treatment must still be administered cautiously. If one operates on a number of patients who have had this treatment at a certain stage, he will be surprised to find that every once in a while, in spite of an apparent improvement, one of them may die in an active toxic condition. I believe that no matter how much patients are apparently improved by the solution, it is essential that one have in mind the degree of toxicity previous to its administration, and if any doubt exists, the operation should be divided into two hemithyroidectomies. In the past we have been most ardent advocates of the multiple stage procedure, and we have now largely given it up because of the preliminary use of compound solution of iodin. So far this year we have done 380 thyroid operations on 358 patients, 116 of which have been cases of primary hyperthyroidism. Out of this number of cases of exophthalmic goiter, 100 were completed in one stage and sixteen in two stages by two subtotal thyroidectomies, and no preliminary ligations have been done this year. There has been one death from pneumonia out of the entire series this year. We still believe that, when the slightest doubt exists, a two stage procedure, being the one of caution, should always be employed, rather than to take the slightest chance with the one stage procedure.

DR. B. T. KING, SEATTLE: Dr. Else has again brought to our attention the question of nonencapsulated adenomatous tissue. I have the impression that the various pathologic descriptions that have been given by different men are not sufficiently uniform to create the impression that the respective writers are agreed on a clear and definite pathologic entity. Wilson of Rochester first described nonencapsulated adenomatous tissue. Later Goetsch described a condition that he termed diffuse adenomatosis. As I recall, he described a condition that he had frequently encountered in patients with a clinical history not greatly different from chronic tuberculosis. A number of his patients had actually been confined in sanatoriums for the treatment of tuberculosis. The pathologic picture he found was of more or less diffuse areas of epithelial cells scattered throughout the gland, with frequently no effort, or abortive effort at least, at acinae formation. The pathologic picture presented by Dr. Else does not appear to correspond with that picture. We have all seen glands similar to those described by Dr. Else. This type of gland is one that develops, as a rule, near puberty, persists as a large diffuse uniform enlargement of the gland for years, later becomes more or less nodular, and under conditions of age, child-bearing, etc., not infrequently grows toxic, presenting a symptomatology not unlike that observed in encapsulated toxic adenomas. These glands grossly are often large, with long bat wing-like projecting poles that extend high in the neck and often below the clavicles. I have been in the habit of classifying them as adenomas associated with colloid goiters, and in operating I have attempted to remove as much as possible of the glossy lobulated tissue that is grossly giving evidence of growth. With the present classification of goiters and the wide variety of pathologic pictures presented under the generally accepted headings, it is questionable whether a new classification will clarify a subject that at best is poorly understood. Only this morning, in the Section on Practice of Medicine, I heard exophthalmic goiter described as one phase of autonomic imbalance, which included everything from Raynaud's disease on one end to exophthalmic goiter on the other, not excepting allergies and pyloric stenosis. However, we can make progress only through new ideas, and it has been interesting to listen to Dr. Else's discussion. I am delighted to hear the excellent results which Dr. Pemberton has had. Also, I share equally with Dr. Lahey his enthusiasm for iodin in the treatment of exophthalmic goiter. Associated with the type of thyroid reactions Dr. Pemberton has mentioned, one encounters acidosis and, frequently, acetone in the urine. Acetone is an end-product of excessive fat and protein metabolism. In the past, surgeons have operated on these patients after they had fasted from twelve to eighteen hours, when the glycogen supply of the liver had been almost completely exhausted. The surgeon induces a hypermetabolism, which, in the absence of carbohydrates, results in acidosis and acetonuria. It has been demonstrated that compound solution of iodin reduces metabolism and postoperative reactions. To my mind it is more rational to prevent acidosis with this solution than to treat it with carbohydrates and alkalis.

DR. E. P. RICHARDSON, BOSTON: The introduction of the use of compound solution of iodin in the treatment of exophthalmic goiter marks a most important day, and I am glad to bear tribute to its progress. At the Massachusetts General Hospital for two years we have followed rather closely a small group of cases. We have found, as they have in other clinics, a marked remission in the course of the disease, ordinarily reaching a maximum in from eight to twelve days, an average drop of from 25 to 30 per cent. in the basal metabolic rate, marked clinical improvement and, particularly, marked lessening in the nervous tension. Compound solution of iodin has affected our clinic in two ways. In the first place, the percentage of immediate subtotal thyroidectomies is now over 80. In the second place, it has influenced us in regard to roentgen-ray treatment. Some years age we tried to judge clinically between the effect of roentgen-ray treatment and the effect of operation in exophthalmic goiter. The effect of operation was distinctly superior to the effect of the roentgen ray. Except in very unusual cases, the roentgen ray is not used in our clinic in the treatment of this disease. There are, however, some possibilities of harm in the indiscriminate use of iodin. In the first place, when it is used as a means of medical treatment, it has been shown that the effect is temporary and does not cure the disease. In the second place, as Dr. Lahey has said, it is difficult in some cases to make a diagnosis, and in these cases it is necessary to stop the iodin and wait some weeks before making a diagnosis. Another harm from the use of iodin is in adenomatous goiters, when it may bring on hyperthyroidism. As an aid to surgery, it is unwise to put too much stress on iodin. It improves these cases but does

not make then normal operative risks. Even if postoperative crises do not occur, patients are apt to go through operation with a rapid pulse and great sensitiveness to operative trauma and complications; more so than normal persons. Much has been gained by the use of iodin, but it does not convert these patients into normal risks. Another possibility of harm is the sudden omission of iodin after partial thyroidectomy, whereupon there is a possibility of the development of a thyroid crisis. The use of iodin, therefore, is not a cardinal treatment or a medical treatment; it is part of surgical treatment, just as is preliminary operation. The cases need to be properly diagnosed. The iodin must be continued during the postoperative period and in many cases continued in small doses after discharge from the hospital. Finally, some of these cases remain poor risks even after the use of iodin.

DR. ALLEN GRAHAM, Cleveland: It is not clear to me from the presentation whether Dr. Else intends to explain all adenomatous goiters as being one entity or as two distinct entities. In the illustrations shown, fetal adenoma, as described by Wolfler (1881), is not clearly differentiated from the type of diffuse adenomatous goiter described by Goetsch and others. Dr. King thinks it is not well to introduce a new classification. There is certainly no objection to the introduction of an entity, new or old, supported by facts. Adenomatous changes that take place in the thyroid are of two distinct types; namely, fetal adenoma, as described by Wolfler, and diffuse adenomatous goiter, having no relation to fetal thyroid. Fetal adenoma indicates congenital goiter, while diffuse adenomatous goiter is a change that takes place in long standing goiters as a result of alternating periods of hyperplasia and involution. In the former there is a great incidence of malignant disease, whereas, up to the present time, we have no convincing example of carcinoma that can be ascribed solely to diffuse goiter. I am heartily in accord with all Dr. Pemberton has said. There is no doubt that the administration of compound solution of iodin is a great advance in the treatment of cases of exophthalmic goiter. Iodin given to such patients can do no possible harm so long as the thyroid is actively hyperplastic. Clinical evidence of hyperplasia is an enlarged soft gland, with thrill and bruit. The effect of iodin administration is evidenced by increasing consistency of the thyroid, disappearance of thrill and bruit, together with clinical improvement. The practical points to be learned by further experience are the amount of iodin to be given, the duration of the iodin treatment, and the time at which to do the primary thyroidectomy. Since July, 1924, we have not performed preliminary operations on any patient under our care. We have been using 10 drops of compound solution of iodin three times a day, observing the patient's general condition, the condition of the thyroid, the metabolic rate, pulse, temperature, etc. Patients have invariably improved satisfactorily, and primary subtotal thyroidectomy has been done in one to three weeks after admission.

DR. GEORGE W. CRILE, Cleveland: When David Marine, in 1911, showed that iodin would convert a colloid goiter into one safe for operation, he urged me to use iodin before operation and I did in a certain number of cases. Unfortunately, I used iodin in cases of adenomatous goiter and had bad results with some very sick patients. Therefore, I discontinued the use of iodin but continued the use of large doses of thyroid extract before and after operation and during early convalescence. I have now taken Plummer's idea and give iodin before operation, but only when the glands are hyperplastic. The results have been a definite improvement in the operability of these cases. It should be borne in mind that iodin may induce hyperthyroidism in cases of quiescent adenomatous goiter. Therefore, when we recommend iodin in the preparation of cases for operation, we ought just as strongly to urge that iodin be not given in cases of adenomatous goiter in adults. The use of iodin has not been the only factor at play in reducing our mortality rate. The omission of ether anesthesia, better teamwork, the better recognition of the patient's condition as a whole, all have played their part. By taking the utmost care in building up the water equilibrium, in protecting internal respiration, in the management of the operation itself, we have been able to lower the mortality rate even without iodin. We have had one series of 125 cases without a death without the use of iodin, but we did use thyroid extract. At the present time we use compound solution of iodin only in cases in which the gland is hyperplastic. We have now a series of 441 cases without a fatality. I am making a plea for two things: first, that we do not relax at all in our care of the patient as a whole and in our careful technic in the handling of the patient, and second, that we avoid the use of iodin in cases that might be converted into hyperthyroidism.

DR. EMIL GOETSCH, Brooklyn: When iodin is used before operation for exophthalmic goiter, it works wonderfully well. I am in accord with practically everything that has been said by the previous speakers on this subject and would like to offer some additional data on the use of iodin. I have had enough experience to know that when iodin is improperly used or not used in the sense that Dr. Plummer has described, one will not obtain the results that have been claimed. When one gives iodin as a preliminary measure and then delays the operation, he will not again have as favorable a chance. That has been my experience in a number of cases. When a patient has been iodinized thoroughly and then has a relapse, I feel I cannot successfully resort to iodin again. It should be made known, particularly among physicians, that the indiscriminate and repeated use of iodin deprives the surgeon of the opportunity to give his patient the striking benefits of an initial preliminary iodin course. This treatment is the greatest check there is in controlling the very active case. Dr. Else was kind enough to refer to my paper of 1920 in which I described the condition to which I gave the name diffuse adenomatosis. The fact that this condition did exist was mentioned previously, although it was differently classified. I believe it is this group of diffuse adenomatosis that has caused a great deal of difficulty to pathologists because of the varying nomenclature. I became interested in this type because of a number of patients in this group who had had treatment for supposed tuberculosis. One was a nurse who had been to a sanatorium. She was suffering from the syndrome characteristic of diffuse adenomatosis. The metabolic rate was not increased. However, ablation of the gland proved successful. The adenomatous tissue in diffuse adenomatosis is not encapsulated. The entire thyroid is involved. Some of the sections Dr. Else showed were typical of the ones I described; others were not. I am not sure whether in his description he was not including two different kinds of pathologic changes. In diffuse adenomatosis, there is no encapsulation. Anything with a capsule around it is easily differentiated grossly from other thyroid enlargements. Adenomas are characterized by one's ability to recognize them. Furthermore, on palpation the nodules can be felt. One cannot palpate nodules in diffuse adenomatosis. He must interpret the condition from the patient's syndrome and verify it microscopically. Total resection is the treatment and in many cases improvement is remarkable.

DR. J. EARL ELSE, Portland, Ore.: Dr. King referred to my paper as bringing out a new classification, but as Dr. Goetsch has said, the describing of a definite pathologic entity is not introducing a new classification. There are two definite distinct pathologic processes: one an adenoma, with a definite capsule, and the other a diffuse adenomatous goiter, with nodular-like masses that for the most part are not definitely encapsulated. Reference has been made to the use of iodin. Iodin has been shown to be of great value in the prevention of goiter. Plummer has demonstrated its value in preparing patients with toxic hyperplastic goiter for operation. But in the treatment of simple goiter we have had little success with its use. At the Goiter Clinic of the University of Oregon, we ran four series of cases of adolescent goiter. In the first series, we gave 10 mg. iodin a day. In the second series, we gave 1 grain (0.06 mg.) of sodium iodid three times a day. In the third series we gave sodium iodid in larger doses, and in the fourth series we gave desiccated thyroid. The patients were observed for a period of from six months to two years, during which time the majority reported every two weeks to have the pulse counted, the neck observed and such other observations made as were necessary. The results were uniformly poor in the series in which iodin was used regardless of the dosage. In the group receiving desiccated thyroid, the results were uniformly good. There were some that did not yield, but the vast majority responded in two or three months. After the thyroid returned to normal, the patients were put on the preventive iodin treatment.

DR. JOHN DEJARNETTE PEMBERTON, Rochester, Minn.: This discussion has revolved about iodin. I want to emphasize a statement that was not sufficiently stressed in my paper. In the Mayo Clinic, iodin is given to patients with exophthalmic goiter only as a preparatory measure for surgery, and not with the idea of curing the disease. We believe that by the use of iodin the postoperative hyperthyroid reactions will be controlled completely. This does not mean that iodin will in itself restore the patient to health, because it will not, but by its administration over a certain period of time, the patient may be safely carried through operation. I think it can be prophesied with confidence that within a few years ligation will be the exceptional rather than the prevailing method of preparing the bad risk patients for operation.

## RECURRENT TYPE I PNEUMONIA*

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The likelihood that a single attack of pneumonia may predispose to subsequent attacks has long been recognized. Statistical evidence has been presented which bears this out: thus, Norris [1] found that of 11,811 cases of pneumonia which he was able to collect from the literature, there had been a previous attack in 1,615, while Cole [2] obtained a history of previous pneumonia in 137 of 607 patients he observed with the disease. Direct observations of two attacks in the same person are relatively infrequently recorded but may be found (among recent reports those of Thomas [3] and Thompson [4] may be cited), and there are instances of many attacks. Cole saw three of the eighteen attacks which affected one individual and found Type III pneumococci in those observed. Norris cites a case of twenty-eight attacks, before the recognition of types of pneumococci. With the increasing knowledge of immunity in pneumococcus infections, it has been thought that Types I and II probably immunized against homologous reinfection. Experimentally, Cecil and Blake [5] found that an attack of Type I pneumonia in the monkey protected against reinoculation one month later. Cole, however, had one case in which Type I pneumonia recurred at an interval of eight months and Thomas observed a patient who, with a history of a previous untyped pneumonia, suffered two attacks due to Type I pneumococcus at an interval of thirty-one days, crisis and recovery both times following the administration of therapeutic serum. As other instances of this kind were not found in the literature, a case closely resembling that of Thomas is thought worthy of record.

### REPORT OF CASE

W. S. T., a student, white, aged 20, entered the Peter Bent Brigham Hospital, Nov. 19, 1924, following an hemoptysis. One sister had died of pulmonary tuberculosis at the age of 12; otherwise the family history was unimportant. He was not habituated to alcohol. He had first had pneumonia at the age of 9, and four other attacks of varying severity, all in the spring of the year, followed before he was 15. In none of these was the sputum typed. There were no other data of importance in the past history save that one afternoon in the spring of 1924, while doing light work, he had coughed up blood. Roentgenograms of his chest at another hospital at that time had shown no definite evidence of disease, and after a three weeks' rest in bed, he resumed his normal life. For two months prior to admission, he thought he had tired more easily than before, but he had held his weight and had not coughed until ten days before admission. The morning of his admission, he coughed up about one-half glass of dark blood and promptly came to the hospital. He remained here four days. He had no elevation of temperature and no subsequent hemoptysis. Physical examination showed him to be well developed and well nourished. The teeth were dirty, with several partially filled cavities. Save for fine crackling râles heard by one observer on one occasion at the right apex, the lungs were clear. The examination was otherwise negative. The clinical pathology was normal, and he raised no sputum that could be examined. The lungs were clear by roentgen ray. He was discharged November 24, with a diagnosis of hemoptysis, cause unknown.

He was readmitted, March 21, 1925, complaining of fever and weakness. In the interval, he had felt well and had attended school. He had had one cold in late December, but no hemoptysis or chronic cough, and his weight had remained the same. The night of March 19, following exposure to a draft, he had developed sensations of warmth, sweating, headache and shivering. In the morning he had an unproductive cough and pain in the right chest. A physician sent him to the hospital. He was only moderately ill, with a temperature of 104, pulse from 100 to 120 and respirations 25 per minute. There was moderate dyspnea. His cheeks were flushed, with circumoral pallor and slight cyanosis of the lips but no herpes. Respirations were shallow, rapid and chiefly abdominal; there was dulness at the right lung base behind, with tubular breathing, pectoriloquy and scattered râles. The hemoglobin was 92 per cent. (Dare instrument); the red cells, 5,700,000; the white cells, 15,000 in number, of which 87 per cent. were polymorphonuclear neutrophils. Blood culture, March 21, was positive for Type I pneumococcus, with less than one organism per cubic centimeter. The sputum was at first scanty; on the 24th, when first raised in sufficient quantity, it showed Type I precipitinogen and Type I organisms by the mouse test. No tubercle bacilli were found. On the 23d, after the blood culture was typed, treatment was begun with Type I pneumococcus antibody solution (Felton [6]), and a total of 160 c.c. was given intravenously in nine doses. On the 25th, his temperature fell by crisis, and he had an uneventful convalescence without serum sickness. April 6, chest films showed a diffuse postpneumonic residue in the lower right lung. He was discharged, well, April 9.

He was admitted for the third time, May 2, 1925, complaining of pain in the left side. During the interval he had been well. April 29, he was slightly chilled while witnessing a baseball game. The night of April 30, while dining, he suddenly had severe left-sided thoracic pain, aggravated by inspiration and coughing and accompanied by dyspnea and headache but no chill. The following day, there was nausea and vomiting and one severe chill; his cough became more annoying and he began to raise brownish sputum. There was a sensation of fever. His physician sent him to the hospital. He was extremely ill, with a temperature of 103, pulse from 120 to 140, and respirations from 30 to 40 per minute. He was restless and dyspneic. There was malar flush but no herpes or cyanosis. Breathing was rapid and shallow. In the left axilla and at the left base posteriorly there was dulness, tubular breathing, increased voice sounds and a questionable friction rub, but no râles. There were a few moist râles at the right base. The pulse was regular but small in volume. The examination was otherwise negative. The hemoglobin was 72 per cent.; the red cells 4,510,000, and the white cells, 9,800, of which 86 per cent. were polymorphonuclear neutrophils. Subsequently, the white count rose to 20,000, May 5, and then declined. There were rare

* From the Medical Clinic of the Peter Bent Brigham Hospital, Boston, and the Department of Bacteriology of the Medical School of Harvard University.

1. Norris, G. W.: Lobar Pneumonia, in Osler and McCrae: Modern Medicine, Ed. 2, **2**: 202, 1913.

2. Cole, Rufus: Acute Lobar Pneumonia, in Nelson Loose-Leaf Medicine **1**: 203, 1920.

3. Thomas, H. M., Jr.: Recurrent Type I Pneumonia: Serum Treatment of Two Attacks One Month Apart, Am. J. M. Sc. **159**: 103 (Jan.) 1921.

4. Thompson, W. G.: Recurrent Lobar Pneumonia, New York M. J. **115**: 259 (March 1) 1922.

5. Cecil, R. L., and Blake, F. G.: Studies on Experimental Pneumonia, VI, Active Immunity Following Experimental Pneumonia in Monkeys, J. Exper. Med. **31**: 685 (June) 1920.

6. Felton, L. D.: A Study of the Isolation and Concentration of the Specific Antibodies of Antipneumococcus Sera, Boston M. & S. J. **190**: 819 (May 15) 1924.

urinary casts throughout the febrile period. Blood culture, taken May 2, gave no growth. Sputum was not raised till May 4; it was blood-tinged, was negative for tubercle bacilli and showed Type I pneumococci on mouse inoculation. A roentgenogram of the chest, May 2, showed large areas of increased density at the periphery of the left lung and at the central portion and upper lobe of the right lung. The roentgen-ray interpretation was bronchopneumonia. His condition became worse, with an average temperature of 104, marked lividity and dyspnea and tracheal râles. He was irrational and was twice out of bed. Caffein, strychnin and digitalis were administered, and on the 5th, when the type of infection was established, treatment was begun with Type I antibody solution (Felton), of which he received 75 c.c. in five intravenous injections. Crisis began that night, the temperature falling to 99 the morning of the 6th, with a corresponding drop in the pulse, slowing of the respiratory rate and marked general improvement. His convalescence was uneventful, undisturbed by serum sickness, and he was discharged, well, May 27. He has been observed almost weekly since that time and appears in excellent health. A roentgenogram of his chest in July, two months after discharge, showed some residual increase in hilar markings but excellent clearing. He has been receiving weekly injections of polyvalent pneumococcus vaccine in the hope of averting further attacks.

COMMENT

The first attack recorded was undoubtedly a lobar infection, and the isolation of pneumococci from the blood stream with the presence of organisms and abundant precipitinogen in the sputum establishes it as due to Type I. The second attack, while involving three separate lung areas in three lobes, was nevertheless croupous pneumonia, clinically, and the patches of consolidation appeared by the roentgen ray to be larger than those usually involved in lobular pneumonia. The sputum was twice injected into mice, and each time a pure culture of pneumococcus Type I was recovered. This organism was fatal to mice when injected intraperitoneally in quantities down to $10^{-5}$ c.c. of eighteen hour broth culture, and was agglutinated to the titer of Type I agglutinating serum (1:64). It is exceedingly unlikely that any other organism was responsible for the pneumonia.

As a rule, antibodies to the pneumococcus are found during convalescence from Type I pneumonia: protective substances (Dochez,[7] Baldwin and Rhoades[8]), agglutinins (Chickering,[9] Blake[10]) and opsonins (Clough[11]) are present in the serum of many patients. The administration of preformed antibody during the illness makes tests for these substances of little value. It may be noted, however, that on March 3, at the height of the first attack and before the administration of antibody solution, the blood serum of this patient protected mice in the approximate proportion of 1 c.c. against 100 fatal doses of Type I pneumococci, whereas at a similar time in the second attack the proportion was 1 c.c. against from 5 to 10, and one month after discharge from the second attack, against ten fatal doses. After two months of subcutaneous immunization with a polyvalent vaccine containing an excess of Type I organisms, the titer was again 100 units to the cubic centimeter. What this might imply, in relation to a possible peculiar inability on the part of this patient to elaborate antibodies, would involve unjustified speculation. It is well to add that, though cultures of the nose and throat two weeks after the second attack failed to show Type I pneumococci, swabbings from the pharynx, Aug. 17, 1925, showed numerous colonies of this organism. Unfortunately, the virulence was not determined. It is possible that the patient is a carrier who occasionally succumbs to the organism present in his pharynx.

7. Dochez, A. R.: The Presence of Protective Substances in Human Serum During Lobar Pneumonia, J. Exper. Med. **14**: 665 (Nov.) 1912.
8. Baldwin, H. S., and Rhoades, Dorothy S.: The Protective Substance in Pneumococcus Pneumonia, with Special Reference to Bacteremia and Specific Treatment, Bull. 141, Hyg. Lab., U. S. P. H. S., April, 1923, p. 43.
9. Chickering, H. T.: Agglutination Phenomena in Lobar Pneumonia, J. Exper. Med. **20**: 599 (Dec.) 1914.
10. Blake, F. G.: Antigen-Antibody Balance in Lobar Pneumonia, Arch. Int. Med. **21**: 779 (June) 1918.
11. Clough, P. W.: The Development of Antibodies in the Serum of Patients Recovering from Acute Lobar Pneumonia, Bull. Johns Hopkins Hosp. **24**: 295 (Oct.) 1913.

SUMMARY

Two attacks of Type I pneumococcus pneumonia occurred at an interval of six weeks in a person who had suffered from several previous untyped pneumonias. There was little response in the production of humoral antibodies to these attacks.

Strong Memorial Hospital.

## *Clinical Notes, Suggestions and New Instruments*

### REVERSE PERISTALSIS ASSOCIATED WITH NAUSEA

JOHN H. FITZGIBBON, M.D., PORTLAND, ORE.

Recent contributions by Alvarez[1] and Keeton[2] have presented interesting and valuable evidence as to the cause of nausea. Both find the bowel to be an important factor in nausea production. For a number of years, Alvarez has considered it "very probable that it is brought about by reverse peristalsis, particularly in the bowel."[3]

Clinical evidence has not been abundant, because of evident difficulties in human experimentation. A case recently observed, however, demonstrates very definitely the association of reverse peristalsis and nausea.

REPORT OF CASE

Mrs. E. M., aged 61, referred to me by Dr. H. M. Greene, July 27, 1925, gave a history of intermittent abdominal distress for several months up until two years ago. A diagnosis of peptic ulcer was made by the family physician. After treatment, she was comfortable until three weeks before I saw her, when pain in the epigastrium reappeared. At times, it came on from thirty minutes to one hour after meals, and was relieved by food. The patient frequently was awakened at midnight by distress and by regurgitation of the gastric contents. Nausea was marked when pain was present, but she usually kept from vomiting.

A physical examination gave negative findings, except for tenderness along the colon and in the epigastrium. The Wassermann examination was negative. Three specimens of vomitus showed free hydrochloric acid, 60; total acidity, 83, and occult blood, strongly positive. The urine was normal; the stools contained a large amount of occult blood in five specimens.

Fluoroscopy revealed a constant defect of the lesser curvature, about 1 inch from the pylorus. Vigorous peristalic waves were seen, but, at times, reverse waves took their place and passed completely and forcibly from the pylorus to the cardia. If, however, a downward wave was met, both faded out. At one time barium had just entered the duodenum, when reverse waves began, and it was seen to pass backward to the pylorus with a sudden rush. It was not possible to tell whether or not some of it entered the stomach from the duodenum.

Whenever reverse waves began, the patient experienced nausea; when the waves were vigorous, vomiting was pre-

1. Alvarez, W. C.: Reverse Peristalsis in the Bowel, A Precursor of Vomiting, J. A. M. A. **85**: 1051 (Oct. 3) 1925.
2. Keeton, R. W.: Nausea and Related Sensations Elicited by Duodenal Stimulation, Arch. Int. Med. **35**: 687 (June) 1925.
3. Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul B. Hoeber, 1922.

vented with difficulty. As the waves subsided, nausea disappeared and normal peristalsis was resumed for a short time, followed by another period of reverse waves and nausea.

An operation, performed by Dr. Rockey, revealed an indurated ulcer, of questionable appearance, involving the lesser curvature and posterior wall. Pyloric resection was done, and microscopic examination confirmed the suspicion of malignancy.

### COMMENT

In this case, definite reverse waves of the stomach and of the duodenum were seen. Nausea accompanied the reverse peristalsis and seemed to vary with the force of the waves. Because of the rapidity with which barium passes through the duodenum, it was difficult to see reverse waves in that organ, except in one instance, when barium was rapidly forced backward along the duodenum to the pylorus.

Stevens Building.

## A SIMPLE APPLIANCE FOR FRACTURED CLAVICLE

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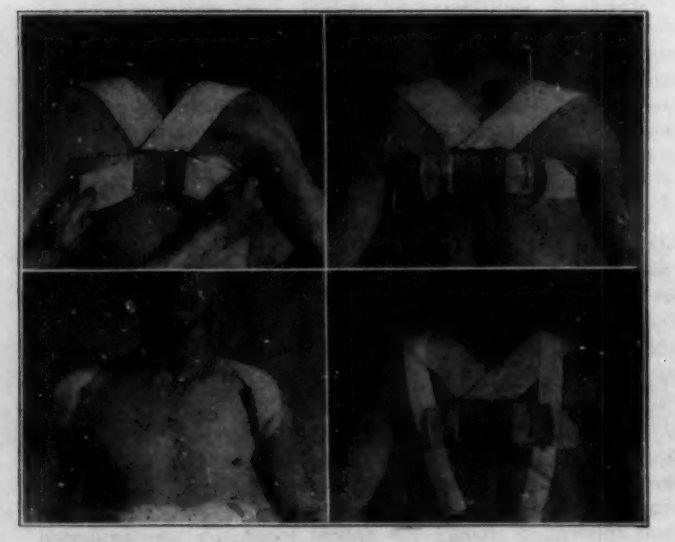
A simple appliance for effecting and maintaining retraction of the shoulders in fracture of the clavicle consists of a strip of 2½ inch cotton webbing, 58 inches long, and a wire



An appliance for fractured clavicle: *A*, retraction of shoulders accomplished by making traction on the ends of the cotton webbing strip; *B*, each end fastened by strong safety pin; *C*, front view, with felt pads in position; *D*, strip of adhesive over each shoulder holding appliance in position.

square (as at *A* in the illustration). The child size is a strip 2 inches wide and approximately 40 inches long, with a correspondingly smaller square. The square is made from No. 10 rust-proof clothes-line wire and is bent in a vise into a rectangle form, 2½ inches by 3 inches for adult size, and 2 inches by 2½ inches for child size. The ends of the wire are welded or may be bent in link form to lock.

The method of accomplishing as much retraction of the shoulders as is necessary simply by making traction on the ends of the cotton webbing strip is indicated in *A* of the accompanying figure. *B* shows each end fastened by a strong safety pin. The front view, with the felt pads in position, is seen in *C*. The pads are so applied that there is no danger of injury to nerves or blood vessels. *D* shows a strip of adhesive, extending from the lower part of the chest posteriorly over each shoulder to the upper part of the chest anteriorly. This adhesive firmly holds the appliance in position. The adhesive strip on the affected side may, if necessary, include a pressure gauze pad over the clavicle fragment.

A wedge-shaped pad under the shoulder of the affected side held in position by two or three turns of a 3 inch muslin bandage, forming a figure of eight, up, over and under the normal shoulder contributes to better alinement of the clavicle and also to immobilization.

The appliance takes up very little space in the hand-bag or may be carried in a coat pocket. There is no fitting to be done and nothing to interfere with the roentgen ray. It holds the shoulders back with minimum discomfort.

# *Special Article*

## TYPHOID IN CERTAIN LARGE CITIES OF EUROPE IN 1924 *

For comparison with THE JOURNAL'S annual survey of typhoid mortality in the large cities of the United States and for its general interest, THE JOURNAL presents a survey of typhoid in certain large European cities that have populations exceeding 100,000. The cities are grouped by countries.

A remarkably low typhoid death rate prevails in the large cities of Great Britain (Table 1). Probably no other country in the world can show so long a list of large cities free from a single typhoid death. No fewer than fifteen cities in Great Britain with a total population of 2,256,700 have a perfectly clear record for 1924, not a single typhoid death occurring in the whole of this large urban population. In the total list of fifteen British cities no municipality had a rate over 5 in 1924, and all but three had a rate less than 2.

TABLE 1.—*Death Rates of Cities in Great Britain from Typhoid per Hundred Thousand Population, 1924*

| | | | |
|---|---|---|---|
| Brighton | 0.0 | South Shields | 0.7 |
| Cardiff | 0.0 | Woolwich | 0.7 |
| Coventry | 0.0 | Bristol | 0.8 |
| Derby | 0.0 | Liverpool | 0.8 |
| East Ham | 0.0 | Preston | 0.8 |
| Gateshead | 0.0 | Salford | 0.8 |
| Leyton | 0.0 | Greenwich | 0.9 |
| Middlesborough | 0.0 | Plymouth | 0.9 |
| Norwich | 0.0 | Bradford | 1.0 |
| Nottingham | 0.0 | Croydon | 1.0 |
| Rhondda | 0.0 | Hull | 1.0 |
| Southend | 0.0 | Newcastle-on-Tyne | 1.0 |
| Swansea | 0.0 | Lewisham (Catford) | 1.1 |
| Walthamstow | 0.0 | London | 1.1 |
| Wolverhampton | 0.0 | Stoke-on-Trent | 1.1 |
| Edinburgh | 0.2 | Leeds | 1.2 |
| Glasgow | 0.4 | Stockport | 1.5 |
| Leicester | 0.4 | Portsmouth | 1.6 |
| Birmingham | 0.5 | Manchester | 1.8 |
| Aberdeen | 0.6 | St. Helen's | 1.8 |
| Dundee | 0.6 | Sheffield | 1.9 |
| Sunderland | 0.6 | Southampton | 4.2 |
| Tottenham | 0.6 | Huddersfield | 4.5 |
| Willesden | 0.6 | Burnley | 4.7 |

In other words, using the same criteria as adopted in our American survey, forty-five cities in Great Britain would be on the honor roll (from 0.0 to 2.0), three in the first rank (from 2.0 to 5.0), and none in the second or third rank. The largest city in the world, London, reports a typhoid rate for 1924 of only 1.1. Only seven American cities had a better record than this in 1924.

* The data contained in this article have been obtained in each instance from the municipal health officers. Death rates are figured on reported midyear population when this information could be secured; otherwise on the best estimate available. Owing to annexation of contiguous territory and other factors, the population of certain cities for 1924 is not in all cases comparable with that reported for preceding years, so that comparisons of these figures with earlier typhoid death rates is perhaps not warranted. As will appear in the lists of cities, we have not this year been able to obtain returns from all localities, since our requests or the answers to them have apparently miscarried.

In Germany (Table 2) the typhoid showing, although very good judged by most standards, does not reach the high degree of excellence shown in British cities.

TABLE 2.—*Death Rates of Cities in Germany from Typhoid per Hundred Thousand of Population, 1924*

| | | | |
|---|---|---|---|
| Chemnitz | 0.0 | Hamborn-on-the Rhine | 2.2 |
| Karlsruhe | 0.0 | Elberfeld | 2.5 |
| Düsseldorf | 0.2 | Hanover | 2.5 |
| Krefeld | 0.8 | Duisburg | 2.6 |
| Gelsenkirchen | 0.8 | Cologne | 2.6 |
| Plauen | 0.8 | Mainz | 2.9 |
| Berlin | 1.0 | Augsburg | 3.1 |
| Frankfort-on-the Main | 1.0 | Essen | 3.1 |
| Nuremberg | 1.0 | Magdeburg | 3.3 |
| Leipzig | 1.1 | Barmen | 3.7 |
| Breslau | 1.2 | Cassel | 4.1 |
| Aachen | 1.3 | Stettin | 4.1 |
| Dresden | 1.3 | Mannheim | 5.2 |
| Munich | 1.3 | Altona | 5.4 |
| Hamburg | 1.8 | Lubeck | 5.7 |
| Saarbrücken | 1.8 | Brunswick | 6.4 |
| Münster in Westphalia | 1.9 | Bochum | 7.0 |
| Stuttgart | 1.9 | Halle | 7.7 |
| Bremen | 2.2 | | |

Only two of the thirty-six cities report no typhoid deaths, and more than half of the German cities have rates over 2. Six have rates over 5. On the whole, the typhoid rates in German cities in 1924 did not

TABLE 3.—*Death Rates of Cities in France from Typhoid per Hundred Thousand Population, 1924*

| | | | |
|---|---|---|---|
| Strasbourg | 0.6 | Le Havre | 6.1 |
| Rheims | 2.0 | St. Etienne | 6.5 |
| Roubaix | 2.6 | Nancy | 6.7 |
| Lyons | 3.0 | Nantes | 7.1 |
| Rouen | 3.2 | Bordeaux | 7.8 |
| Toulouse | 3.4 | Brest | 13.4 |
| Lille | 4.5 | Marseilles | 31.0 |
| Paris | 5.1 | | |

range notably lower than those in the large cities of the United States that have similar climatic conditions.

Typhoid rates in the French cities (Table 3) are somewhat higher on the average than those in either Germany or Great Britain. So far as statistics are

TABLE 4.—*Death Rates of European Cities Outside of Great Britain, Germany and France, from Typhoid per Hundred Thousand Population, 1924*

| | | | |
|---|---|---|---|
| Stockholm, Sweden | 0.0 | Lwow, Poland | 8.7 |
| Zurich, Switzerland | 0.0 | Liége, Belgium | 9.5 |
| The Hague, Holland | 0.2 | Graz, Austria | 11.1 |
| Oslo, Norway | 0.4 | Riga, Latvia | 11.2 |
| Utrecht, Holland | 0.7 | Odessa, Russia | 11.4 |
| Copenhagtn, Denmark | 1.0 | Moscow, Russia | 12.0 |
| Helsingfors, Finland | 1.0 | Yaroslav, Russia | 14.0 |
| Antwerp, Belgium | 1.3 | Leningrad, Russia | 14.6 |
| Geneva, Switzerland | 1.6 | Vilna, Poland | 15.0 |
| Basle, Switzerland | 2.1 | Budapest, Hungary | 15.5 |
| Brussels, Belgium | 2.3 | Cartagena, Spain | 15.8 |
| Prague, Czechoslovakia | 2.3 | Oporto, Portugal | 15.8 |
| Dublin, Irish Free State | 2.4 | Athens, Greece | 18.4 |
| Danzig, Danzig | 2.7 | Warsaw, Poland | 20.0 |
| Vienna, Austria | 3.7 | Lisbon, Portugal | 20.7 |
| Bucharest, Roumania | 4.1 | Murcia, Spain | 22.5 |
| Amsterdam, Holland | 4.2 | Rome, Italy | 26.2 |
| Gottenborg, Sweden | 7.4 | Ufa, Russia | 26.4 |
| Ghent, Belgium | 8.0 | Lorca, Spain | 40.0 |

available, typhoid has for years been more prevalent in France than in Great Britain, Germany or the United States. In general, the northern French cities have lower rates than those farther south, the extremes being represented by Strasbourg (0.6) and Marseilles (31.0).

In the rest of Europe (Table 4) there is a general, although not exact, correspondence between the latitude of the city and the typhoid rate, the cities in southern Europe averaging on the whole higher than those in the north. The Russian and Polish cities, however, appear to suffer more from typhoid than other European communities in the same latitude.

It should be noted that in many parts of Europe the 1924 typhoid rate was notably higher than that for 1923, the increase being particularly marked in the Baltic regions.

## New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**OVARIAN SUBSTANCE, DESICCATED-P. D. & CO.**—The entire fresh ovaries (including the corpora lutea) of the hog or cow, dried in vacuo and powdered.

*Actions and Uses.*—See Ovary, New and Nonofficial Remedies, 1925, p. 251.

*Dosage.*—Usually 0.3 Gm. (5 grains) daily.

Manufactured by Parke, Davis & Company, Detroit. No U. S. patent or trademark.

*Tablets Ovarian Substance, Desiccated-P. D. & Co., 5 grains.*

Ovarian substance, desiccated-P. D. & Co., is a yellowish or brownish powder, having a characteristic odor. It is partially soluble in water.

One part of the desiccated powder represents about six parts of the fresh gland.

**OVARIAN RESIDUE, DESICCATED-P. D. & CO.**—The residue from the fresh ovaries of the hog or cow, after removal of the corpora lutea, dried and powdered.

*Actions and Uses.*—Ovarian residue is used for the same conditions as those in which the entire ovarian substance is used. (See Ovary, New and Nonofficial Remedies, 1925, p. 251).

*Dosage.*—From 0.3 to 1.2 Gm. (5 to 20 grains) daily.

Manufactured by Parke, Davis & Company, Detroit. No U. S. patent or trademark.

*Capsules Ovarian Residue, Desiccated-P. D. & Co., 5 grains.*

*Tablets Ovarian Residue, Desiccated-P. D. & Co., 5 grains.*

Ovarian residue, desiccated-P. D. & Co., is a yellowish or brownish powder, having a characteristic odor. It is partially soluble in water.

One part of the desiccated powder represents about six parts of the fresh gland.

**INSULIN-MULFORD** (See THE JOURNAL, June 20, 1925, p. 1917).

The following dosage forms have been accepted:

*Insulin-Mulford, 10 Units, 10 Cc.:* Each cubic centimeter contains 10 units.

*Insulin-Mulford, 20 Units, 10 Cc.:* Each cubic centimeter contains 20 units.

*Insulin-Mulford, 40 Units, 10 Cc.:* Each cubic centimeter contains 40 units.

*Insulin-Mulford, 80 Units, 10 Cc.:* Each cubic centimeter contains 80 units.

**DEXTROSE.**—For description, see the U. S. Pharmacopeia X under Dextrosum.

The following dosage form has been accepted:

*Ampoules Dextrose 50%, 20 Cc.:* Each ampule contains 20 Cc. of a 50 per cent. solution of dextrose U. S. P.

Prepared by Swan-Myers Company, Indianapolis.

**Dementia Praecox.**—The fundamental clinical disorders of dementia praecox are a weakening of judgment, of attention, of mental activity and of creative ability, the dulling of emotional interest and the loss of energy. Lastly there is the loosening of the inner unity of the psychic life.—Sir Frederick W. Mott.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 12, 1925

## TO ALL FELLOWS AND JOURNAL SUBSCRIBERS

The small colored slip between these pages is a statement for 1926 Fellowship dues and subscription to THE JOURNAL. If enclosed in an individually addressed envelop and sent under two cents postage, the slip might seem more elegant, but it could not be more expressive. Those who have already paid will naturally disregard the slip. All others are urged to cooperate by remitting now and making it unnecessary to send special statements later.

The slip carries also the names and subscription prices of the various other journals published by the Association. Renewals or new subscriptions to any of these may be entered in the blank lines on the slip, and payment made with Fellowship and subscription to THE JOURNAL.

Special attention is also called to the color pages at the front of THE JOURNAL. In the past, many physicians have found that a subscription to one of the American Medical Association's special journals is an excellent holiday gift to a colleague. Then, too, many members of the profession will doubtless welcome the suggestion of gift subscriptions to *Hygeia*, the health magazine published by the Association. Special rates are offered at this time, and the gift order forms attached to the color pages can conveniently be returned with the statement for Fellowship and subscription dues. One remittance may be made to cover all dues and subscriptions.

## IMMUNOLOGIC EVIDENCE AS TO THE EVOLUTIONARY RELATIONSHIPS OF MAN

In these days, when anything pertaining to evolution and the species relationships of man has news interest, much attention will probably be paid to a series of articles by Landsteiner and Miller[1] of the Rockefeller Institute on the serologic relationships of the blood of the primates. This topic aroused interest in the early days of immunologic investigation, when the blood relationships of different species, as shown by the new methods, were found to throw much light on the problems of biologic relationship and evolution. Nuttall's famous monograph on blood immunity and blood relationship, published in 1904, brought out the fact that precipitin tests with blood serum from primates showed a close relationship between man and the orang-utan, chimpanzee and gorilla, but less relationship between man and the monkeys. Other investigators obtained similar results and indicated that it was difficult to distinguish between human serum and that of the anthropoids by immunologic tests, but that there are readily discernible quantitative differences between human or anthropoid serum and the serum of the monkeys. Landsteiner, having found that species differentiation is more distinct between corpuscles than between the serum of different animals, has applied this fact to an investigation of the relationships of the corpuscles in the different available primates, studying the effects of agglutinins on corpuscles, and refining the results by determining the effect of removal of nonspecific agglutinins by saturation.

While these and other refined methods fail to differentiate the blood of white men and of American negroes, they do show differences between the corpuscles of human and of anthropoid blood, and between the corpuscles of two genera of monkeys, although the precipitin reaction as ordinarily employed fails to make these distinctions. But it is also clearly shown that the difference between the blood of the lower monkeys and the blood of the anthropoids or of man is much greater than that between the blood of man and that of the anthropoids. Indeed, according to immunologic tests, there seems to be less difference between the blood of man and that of the chimpanzee than between the blood of horses and that of donkeys, which species are so closely related that they can hybridize. This observation agrees with the interesting relationship that has been shown in the metabolism of these species; namely, that while nearly all mammals convert most of the uric acid arising in their metabolism into allantoin, man and the anthropoids differ from other mammals, including the common monkeys, in being unable to do this,[2] because man and the anthropoids alike lack the necessary uricolytic enzyme in their livers.[3] These demonstrations of biochemical relationships are in complete agreement with the view commonly accepted by zoologists that man is not evolved directly from any of the existing species of apes and monkeys, which laymen and the fundamentalists continue to assert is the doctrine of evolution, but the monkeys, the anthropoid apes and man have all merely sprung from a common stock, probably at some remote time. The serologic

1. Landsteiner, K., and Miller, C. P., Jr.: Serological Studies on the Blood of Primates, J. Exper. Med. **42**: 841, 853, 863 (Dec.) 1925.

2. Wiechowski: Prag. med. Wchnschr. **37**: 275, 1912. Hunter and Givens: J. Biol. Chem. **13**: 371, 1912; **17**: 37, 1914.

3. Wells and Caldwell: J. Biol. Chem. **18**: 157, 1914.

evidence does not indicate that anthropoids are an intermediate step between lower monkeys and man, for man and the anthropoids seem to be equally removed from the monkeys.

Study of the natural agglutinins present in the blood of man and of apes shows that the anthropoid blood contains the same four groupings that are familiar in human blood, but that similar iso-agglutinogens are not present in the lower monkeys or in other mammals. To explain this fact, the simplest assumption seems to be that the iso-agglutinable factors existed before man and the anthropoids were differentiated from their common ancestor. Paleontologic studies have led to the generally accepted conclusion that the existing species of man is only one of a number of human species, the rest of which have become extinct, as for instance the Neanderthal man. If the group factors evolved before the human stage had been reached, they must have been present in these various fossil human species. At any event, we now find them present in man, the chimpanzee, the orang-utan, and presumably in the gorilla, which is not at present a laboratory animal, but not at all in the ordinary monkeys.

## THE NERVOUS CONTROL OF INSULIN SECRETION

The assumption that the metabolism of sugar in the body may be regulated in some way through intermediation of the nervous system is by no means recent, for it originated with the classic piqûre or "sugar puncture" experiment of Claude Bernard in 1855. That investigation fortified the belief that stimulation of sensory nerves or lesions of the central nervous system may produce glycosuria. In the earlier studies of this "nervous diabetes," the implications were that somehow glycogenolysis was brought about by the changes initiated. It was assumed, for example, that there was a direct nervous stimulation of the hepatic cells leading to the augmented production of sugar from the glycogen stored there. Somewhat later, the popular explanation pointed to liberation of epinephrin, a sugar-mobilizing hormone, so that the hypoglycemic effects of nervous origin appeared to be exercised through the intermediation of the suprarenal glands.

The recognition of pancreatic diabetes as a disease entity and the introduction of the idea of insulin deficiency as a cause of sugar surplus have turned the trend of investigation. Whether we conceive of the pancreatic hormone as promoting glycogenolysis or glycolysis or both is of secondary moment in discussing the mechanism whereby the corrective insulin is liberated from the pancreas. Are nerves involved? So far as the external secretion of pancreatic juice is concerned, it has not been easy to demonstrate participation of either splanchnic or vagus nerves, although there is some evidence of the existence of secretory fibers running chiefly in the vagi. There is little doubt any longer that the islets of Langerhans are bountifully supplied with nerve fibers, particularly from the vagi.[1] Britton has remarked that such a wealth of neural elements, intimately related to the islet cells of the pancreas, is obviously of great significance and demands an explanation in terms of function. His own studies[2] at the laboratory of physiology in the Medical School of Harvard University furnish evidence that the internal secretion of the pancreas is affected by nervous influences, and that control of the secretion of insulin occurs through the right vagus nerve. Thus, under appropriate conditions, stimulation of this nerve upsets the constancy of the blood sugar level and produces a lowering of the blood sugar which persists during the period of stimulation. Blood sugar curves representing these results are similar to those obtained under insulin administration. When the stimulus is stopped, the original or even a higher glycemic level may be reached. These phenomena may happen without changes in the circulation; they are missed if the nerves and vessels of the pancreas are ligated.

The new experiments thus lend some support to the suggestion that disturbances of innervation also may be involved in the defective utilization of carbohydrates due to pancreatic disorder.

## DEATH FROM ANOXEMIA

Nearly a century and a half has elapsed since Lavoisier drew attention to the true importance of oxygen. Since that time varying conceptions have been advanced with respect to the precise function of the element in the living organism. It was early held that the life processes are essentially those of oxidation, and the obvious analogies of the respiratory exchange with what takes place in ordinary combustion were naturally much stressed. However, there is no longer warrant for assuming that oxygen is the immediate cause of the chemical transformations in the body; it is rather the metabolism that determines the amount of oxygen to be absorbed. Respiration is not the cause of the instability of materials in the tissue cells; but rather the instability of reactivity in the cells is the stimulus for the active consumption of oxygen. Furthermore, the energy liberated in the organism, as in the contraction of a muscle, is not conceived at present to be the immediate outcome of an oxidative explosion but rather to have its source in other chemical changes. Oxygen "supplies the energy to recharge the energy reservoirs of the system."

Whatever the function of oxygen may be in ultimate analysis—whether, for example, it acts directly on the

1. De Castro, F.: Rech. biol. de l'Univ. de Madrid **31**: 422, 1923. Gentes, L.: Compt. rend. Soc. de biol. **54**: 202, 1902. Pensa, A.: Bol. d. Soc. Med. Chir. di Pavia, June 23, 1904; Arch. ital. de biol. **44**: 1, 1905.
2. Britton, S. W.: Studies on the Conditions of Activity in Endocrine Glands, XVII, The Nervous Control of Insulin Secretion, Am. J. Physiol. **74**: 291 (Oct.) 1925.

stored nutrients or only on such degradation products as lactic acid—in any event it is indispensable at some stage of the metabolic changes. The end-products of metabolism are almost without exception richer in oxygen—that is, more highly oxidized—than their precursors in the body. A recent writer[1] has remarked that oxidation is essential to the cell as the source of energy; energy is required for the internal and external work of the cell. By external work is meant the specific physiologic activity of the cell; in the case of the muscle cell, contraction; in the glandular cell, secretion, and in the nerve cell, the discharge of the impulse. By the internal work of the cell is meant that, in total absence of external work, the living cell requires energy for the maintenance of its structure, the directional work of permeable membranes, the maintenance of potential inequalities, and the prevention of free diffusion.

Although the opportunity for securing oxygen in adequate amounts is rarely interfered with in the usual routine of everyday life, times of stress do arise. The element may be present but not available. "Oxygen," we are told, "like money, is of no value unless we can use it. Oxidation is the important thing for the cell, and oxygen want is but one of many means of reducing oxidation." What happens when an interference actually arises, when anoxemia intervenes? The appearance of organic acids in the urine and blood under such conditions long ago prompted the belief that acidosis, whatever that may have implied, is a prominent characteristic of oxygen deficiency. As a matter of fact, there may be an actual alkalosis of the blood in response to anoxemia. The phenomena have lately been clarified by the studies at the University of Wisconsin. The alkalosis observed is due to excessive loss during the accelerated breathing that occurs with oxygen want. This hyperpnea is, in turn, due to reduced oxidation in the cells of the respiratory center. After a certain period of time, according to the Wisconsin observations, the fixed acids produced as a result of decreased oxidation in the tissues of the body compensate for the loss of carbon dioxid, and the blood $p_H$ becomes normal. Following this, there develops a most extreme grade of acidosis, depending on the degree and duration of reduced oxidation. According to the hypothesis, the acidotic type of metabolism induced interferes with oxygen fixation by the cell and thus further stimulates. This vicious circle of oxygen want and acidosis continues until oxidation is reduced to the point at which no functional activity can be supported. Then, we have depression or paralysis. Finally, the energy liberation is reduced to a point which does not even meet the small requirement of the internal needs of the cell. When the latter no longer is able to continue its usual functions, an irreversible change may ensue—death. Under such conditions, administration of alkali during the acidotic stage may actually prolong life.

1. Koehler, A. E.; Behneman, H. M. F.; Benell, O. E., and Loevenhart, A. S.: The Cause of Death from Anoxemia, Am. J. Physiol. 74:390 (Nov.) 1925.

## Current Comment

### THE POST-GRADUATE ASSOCIATION'S "MEDICAL TACTICS"

During the last few weeks the medical profession of this country has been widely circularized by a somewhat imposingly named concern, the "Post-Graduate Association," at 104 Hills Road, Cambridge, England. The advertising booklet sent out by the "Post-Graduate Association" is a red-covered affair entitled "The Management of Patients." The P. G. A. has for sale two "courses," one on "Medical Tactics," and another on Therapeutics. Either course alone is offered to American physicians for $5.50, or both courses for $10. Those who purchase the course on Tactics must sign a contract not to show it to any one else. While we have not seen the complete course, the syllabus, in the booklet already referred to, is intriguing. The course, it seems, instructs the physician how to so influence patients that they will come back again. It gives suggestions as to the doctor's house, its position, the character of its door and door plate, how the waiting and consulting rooms should be furnished, what instruments should be displayed—for psychic effect—and what instruments should be kept out of sight. It appears from the syllabus that the businesslike doctor must make sixteen impressions on each patient in an ordinary case—sixteen-to-one, 1925 model—and the P. G. A. course tells him how to make them. The single case in which it is judicious for the doctor to laugh at the patient is described. This alone should be worth five dollars. From the syllabus one gets the impression that this course in Tactics is similar in character and scope to the "course" of "lectures" given in American chiropractic factories on "How to Sell Chiropractic," except that in this instance it is applied to medicine instead of Palmerism. In order to lend an air of verisimilitude to an otherwise unconvincing narrative, the P. G. A. purports to quote "Press Opinions" of ancient vintage from some medical journals published in the British Isles. The leading opinion quoted is credited to the *British Medical Journal* of June 6, 1914. The quotations in this case are so staccato and so obviously separated from the context as to arouse suspicion. Reference to the *British Medical Journal's* original report shows that our British contemporary published a mildly ironical article that was not in any sense the favorable notice that the disjointed quotations lead one to suppose. Inquiry made in Great Britain brings the information that there is no Post-Graduate Association at Cambridge. The address given is that of the printing firm that got out the syllabus already referred to. So far as we can learn, the "Association" consists of a man (not a physician) and his wife who occupy a little office in the building of the printing establish-

ment. It seems, too, that booklets similar to those circulated among American physicians have been distributed among British physicians, the only difference being that the Post-Graduate Association charges the Britishers six guineas (about $30) for what it offers to the American for $10. What do you make of that, Watson?

## TYPHOID IN EUROPEAN CITIES

The survey of typhoid mortality in some of the chief European cities, presented in this issue,[1] makes possible a comparison of typhoid in American municipalities with the European prevalence of this disease. The remarkably low typhoid rates in British cities are especially striking. It is evident, however, that there is no longer the great discrepancy between American and European typhoid rates that existed twenty-five or even fifteen years ago. The large cities in Germany, for example, where the antityphoid campaign began early and was conducted with great skill and persistence, are now little if any superior in their rates to American cities. The survey also shows, although there are some cities unfortunately not on our lists, that typhoid is less prevalent, on the whole, in the northern cities than in the southern. This is precisely the same incidence observed in the geographic distribution of typhoid in the United States. Whether this is due to greater opportunities for transmission in cities with a mild or subtropical climate such as are furnished, for example, by more informal ways of living or by more ample opportunity for fly-borne infection, or whether there is a real climatic influence on susceptibility, are questions that can hardly be answered here. Quite possibly both factors may play a part. It will be of interest to observe in succeeding years whether the typhoid trend in Europe is as steadily downward as it has been in the United States since 1910. It can safely be predicted that the suffering and loss of life from typhoid throughout the world in the twentieth century will be only a fraction of what it was in the nineteenth.

## RURAL VERSUS URBAN HEALTH

"It is usually those who spend much of their lives in the open who enjoy the best health and the greatest longevity. It is a great advantage to go into camp in the summer and to live in the country as much as possible. This is a fundamental requirement in any healthful living program."[2] These words from a popular exposition on how to live epitomize a widespread belief. By many the championship of the outdoor life is made synonymous with residence in the rural districts. Hence the city dweller has of late often evoked expressions of sympathy from those whom circumstance has protected from an urban existence. There are indications, however, that good health and fine physique are by no means an exclusive privilege of country folk; nor does the urbanite have a monopoly of all the infections and contagions. Not a little surprise was occasioned by the findings of Wood,[3] who concluded from the results of the examination of more than half a million school children that physical defects are greater in rural than in urban children. In harmony with this, Shepard and Diehl[4] ascertained, from an examination of students at a representative state university, that those who have been raised in villages and on farms show more physical defects and more multiple defects than those raised in large cities. The nature of the defects most frequent among students from villages suggest such possible common causes as neglect, congenital anomalies, poor development, frequent exposure to infection, poor hygiene and lack of school health supervision. At any rate, students raised in cities of more than 50,000 population show the lowest number of physical defects. These authors[5] have now supplemented their study by securing data on the relative occurrence of certain diseases previous to the university careers among groups of 5,000 students from various sized communities. Considering here the two extreme groups only, students from the rural communities are highest in past histories of pleurisy, pneumonia, rheumatism, smallpox and tuberculosis; they are lowest in respect to chickenpox, diphtheria, tonsillitis, typhoid fever and whooping cough. Students from cities of more than 50,000 population are lowest in past histories of appendicitis, influenza, measles, mumps, pleurisy and smallpox, but highest in the early incidence of chorea. Male students raised in villages give a history of having had the most diseases. The country and cities vie with one another, the record for low incidence of the common maladies being slightly in favor of the largest cities. It is unwise to dogmatize from statistics derived from a single region, Minnesota; but one cannot overlook the implied possibility that between the present-day rural and urban health-promoting activities the urban practices cannot be regarded as comparative failures.

## A HUMORAL MECHANISM FOR GASTRIC SECRETION

The development of the hormone hypothesis in physiology has brought about a notable modification of the points of view from which various functions are now examined. Chemical substances, arising in various bodily localities, may pass into the blood stream and produce effects in distant organs. This provides for a chemical coordination of the activities of the organism working side by side, as Bayliss expressed it, with that through the nervous system. Function is no longer to be conceived of as stimulated or depressed through nervous impulses alone. There can be no doubt of the simultaneous efficacy of humoral regulations as well. The kidney transplanted from the abdomen to distant parts has been seen to preserve its secretory potency after all its nervous connections have been severed. The mammary glands

1. Typhoid in Certain Large Cities of Europe in 1924, this issue, p. 1890.
2. Fisher, Irving; and Fisk, E. L.: How to Live, Ed. 18, New York, Funk and Wagnalls Company, 1925, p. 28.
3. Wood, T. D.: Health Essentials for Rural School Children, Ed. 2, Chicago, American Medical Association, 1921.
4. Shepard, W. P., and Diehl, H. S.: Rural and Urban Health, J. A. M. A. 83: 1117 (Oct. 11) 1924.
5. Shepard, W. P., and Diehl, H. S.: Rural and Urban Health, II, A Comparison of Past Diseases in University Students from Rural and Urban Districts, J. Indust. Hyg. 7: 481 (Nov.) 1925.

likewise have been demonstrated to develop even after the integrity of their nerve supply has been destroyed. Now Ivy and Farrell [1] at the University of Chicago have given proof of the long postulated humoral mechanism for gastric secretion. They transplanted gastric pouches, severed from the stomach, into subcutaneous tissues in the region of the mammary gland, where the rich vascularity was likely to promote survival of the displaced parts. Such pouches secrete a gastric juice containing acid after a meal and after histamin and gastrin administered subcutaneously. This shows decisively that a humoral stimulus is one of the mechanisms concerned in the genesis of gastric secretion. Ivy and Farrell were successful also in stimulating the glands of the pouch by mechanically distending it with a balloon, which proves that a local mechanism is concerned, at least in part, in this type of stimulation. These new studies do not give a final answer to the question as to what occurs normally when the flow of gastric juice is incited. They merely enforce the admission of humoral possibilities in the domain of gastric secretion.

## Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

### ARIZONA

**Personal.**—Dr. Kimball Bannister, Phoenix, recently won the state golf championship in a match at Clemenceau.

**Society News.**—The Yavapai County Medical Society met with the medical officers at Whipple, October 14, each group having in attendance 100 per cent. of its membership.——Dr. John C. Wilson, Los Angeles, addressed the Gila County Medical Society, Globe, November 3, on "Injuries of the Spine."

**Hospital News.**—At a recent meeting of the staff of the Arizona Deaconess Hospital, Phoenix, Dr. John W. Thomas was elected chairman of the staff; in the report of the chairman of the hospital for the last year, the total number of patients for the year 1924-1925 was said to be 1,817, which was an increase of 72 per cent. over the previous year.

### COLORADO

**Publicity Report.**—The committee on public policy of the Colorado State Medical Society reported at the last annual meeting that in the year 1924-1925 there had been ten lectures and demonstrations in the series arranged for the public and that they cost about $1,600, of which the Colorado State Medical Society contributed about $250; the approximate attendance was 1,600. The subjects of the lectures were (1) The Miracle of the Roentgen Ray; (2) The Magic of the Microscope; (3) Vitamins; (4) The Man of 1940; (5) The Truth About Glands; (6) Teeth: Friends or Foes; (7) Cancer; (8) Medical Frauds; (9) The Dangerous Age; (10) Casting Out Devils.

**Free Medical Service.**—The visiting staff of the Denver General Hospital is composed of 125 physicians, appointed for one year for a period of service of from two to four months, during which they are subject to call day or night. *Municipal Facts*, published by the city and county of Denver, estimates that the hospital receives in service about a million dollars a year from these physicians. They say that this service is rendered cheerfully, that the visiting staff makes available to the poor the same medical advice that the rich receive and provides for emergencies for everybody and that however the city may improve the hospital, it is well to remember that Denver physicians bestow the gift inestimable.

### CONNECTICUT

**Personal.**—Dr. Theodore S. Moise, Jr., has been promoted to an assistant professorship at Yale University School of Medicine, New Haven.

**Further Assistance to General Practitioners.**—Yale University School of Medicine, New Haven, has extended its cooperation with physicians of the state in arranging to have clinics conducted by members of the faculty at the Middlesex Hospital, Middletown. There will be a clinic each month covering pediatrics, surgery, medicine, obstetrics and gynecology, in charge of Drs. Edwards A. Park, Samuel C. Harvey, Francis G. Blake and Arthur H. Morse, respectively.

### DELAWARE

**Quack Grenoble Gets Two Years.**—Sentences totaling two years were imposed, according to the Wilmington, Del., papers, on "Dr." Arthur G. Grenoble (alias Greenoble) on charges of embezzlement and practicing medicine without a license. He was sentenced to a year's imprisonment on each charge, the sentences to run consecutively. It seems that Grenoble borrowed money two years ago on the claim that he wanted to start a business of selling "Stommache Water." He did not start the business nor would he return the money; hence the charge of embezzlement. The other charge was lodged against him as a result of his treatment of an aged man for what was believed to be cancer. Grenoble has called himself "president" of a quackish outfit known as the "Grenoble Arthurg College," which purported to give a "postgraduate course in the treatment of cancer." Grenoble has been a notorious quack for years. In 1914 he was plying his trade in Key West, Fla., and carried full-page advertisements in the Key West *Morning Journal*. According to reports made at that time by the state board of health of Florida, the Monroe County Medical Society secured sufficient evidence against Grenoble (at that time he called himself "Greenoble") to get him convicted of violating the Medical Practice Act, but the quack had enough political and newspaper influence to be immune. He was twice convicted and sentenced in Florida. The first time a local senator and some other politicians succeeded in having his sentence revoked. On his second conviction he was fined $400, and a paper that carried his advertising came out with a two-column article deploring what it termed the outrage and abuse of justice in sentencing this "benefactor." A subscription was started by means of which enough funds were raised to pay Grenoble's fine. In 1921 Grenoble was quacking it in Atlanta, Ga., and in July of that year was sentenced to pay a fine of $500 and serve twelve months on the chain gang and three months in the county jail. The matter was reported at the time in this department of The Journal, Aug. 6, 1921. In 1923 Wilmington, Del., papers carried a news item to the effect that the Wilmington Preachers' Association had been impressed by Grenoble's assertion that he had discovered a cure for cancer and had named a committee to make an investigation.

### DISTRICT OF COLUMBIA

**Society Elections.**—At the annual meeting of the Medical Society of the District of Columbia, December 2, at Washington, Dr. Joseph S. Wall was elected president; Drs. Charles S. White and Amelia Frances Foye, vice presidents; Dr. Coursen B. Conklin, secretary-treasurer, and Dr. William G. Morgan, delegate to the American Medical Association. ——At the annual meeting of the Washington Tuberculosis Association, November 30, Dr. George M. Kober was reelected president and Dr. Harvey W. Wiley, vice president. Dr. William C. Gwynn and Dr. William C. White were elected members of the board of directors.

### GEORGIA

**Personal.**—Dr. John O. Elrod, Forsyth, formerly president of the Medical Association of Georgia, has been appointed by the governor to fill the vacancy on the state board of medical examiners caused by the resignation of Dr. William C. Williams, Jr., Cochran.——Dr. Dunbar Roy has been elected professor emeritus of otorhinolaryngology at Emory University, Atlanta. Dr. Roy has been connected with the medical department of the school for thirty-one years.

1. Ivy, A. C., and Farrell, J. I.: Contributions to the Physiology of Gastric Secretion, VIII. The Proof of a Humoral Mechanism, Am. J. Physiol. **74**: 639 (Nov.) 1925.

## ILLINOIS

**Personal.**—Dr. Thomas G. McLin, formerly of Jacksonville, has been transferred to the U. S. Veterans' Hospital, Fort MacKenzie, Sheridan, Wyo., where he will be clinical director.——Dr. Henry A. Merkel, Wilmington, has been appointed physician to the Soldiers' Widows' Home, to succeed Dr. Charles J. Carlin.

**Society News.**—Dr. Roden Robinson Duff, Chicago, addressed the Adams County Medical Society, Quincy, November 9, on "The Management of Common Fractures."——Dr. Harold M. Camp, secretary, Illinois State Medical Society, addressed the Chamber of Commerce of Cambridge, November 16, on "Medical Service in Illinois."

### Chicago

**Chemistry Luncheon.**—At a luncheon, December 5, at the University of Chicago, given by President Max Mason, Dr. William H. Mayo, Rochester, Minn., gave an address on "Chemistry in Medicine"; Arthur D. Little, D.Chem., Cambridge, formerly president of the Amercian Chemical Society, on "Chemistry in Industry," and Julius Stieglitz, Ph.D., head of the department of chemistry, University of Chicago, on "Chemistry in the University." Following luncheon, the guests were taken through Kent Chemical Laboratory, where each man engaged in research demonstrated his particular problem.

**Dr. Hedblom Appointed Professor of Surgery at Illinois.**—The board of regents of the University of Wisconsin announced, December 2, the resignation of Dr. Carl Hedblom, who has been professor of surgery in that institution since June 26, 1924. Dr. Hedblom has been appointed professor of surgery at the University of Illinois College of Medicine, Chicago, and will take up his duties, February 1, 1926. Dr. Hedblom is a graduate of Colorado College (B.A.), Harvard University (M.D.), and the University of Minnesota (Ph.D.,; he was an intern in the Massachusetts General Hospital, Boston; professor of surgery in the Harvard Medical Schools of China from 1913 to 1916; appointed head of the section on general thoracic surgery at the Mayo Foundation in 1919 and was assistant professor of surgery in the University of Minnesota.

**Health Pageant.**—Sponsored by the Seventh District Illinois Federation of Women's Clubs and under the auspices of the Northwest Branch of the Chicago Medical Society and the Northwest Branch of the Chicago Dental Society, an All-Community Health Pageant was held, December 3-5, at the Logan Square Masonic Temple. Among the features of the pageant were free medical and dental examinations for children and adults, and a prize was given for the healthiest man and woman past 70 who lived on the northwest side. Among the speakers were Dr. Thomas Parran, Jr., U. S. Public Health Service, whose subject was "Cooperation"; Dr. Abraham Myerson, professor of neurology and neuropathology, Tufts College Medical School, Boston; Charles N. Johnson, D.D.S., formerly president of the American Dental Association; Dr. Claude C. Pierce, U. S. Public Health Service; Dr. Borden S. Veeder, St. Louis, and Dr. Morris Fishbein. The physicians and dentists were guests of the business men of the Northwest side at a dinner, Friday evening.

## INDIANA

**Joint Meeting with Dentists.**—Dr. Joseph C. Bloodgood, Johns Hopkins University Medical School, Baltimore, was guest of honor at a joint meeting of the First District Dental Society and the Vanderburgh County Medical Society, Evansville, December 4, on which occasion he gave an address on "Prevention of Cancer of the Mouth"; among others Dr. Bernard D. Ravdin spoke on "Stomatologic Problems Causing Eye, Ear, Nose and Throat Complications" and William G. Downs, Jr., D.D.S., on "Stomatology, the Common Ground in Medicine and Dentistry"; it was decided to call a meeting of dentists and physicians in this locality for the purpose of forming a stomatologic association, which, it is said, would be the first in the Middle West.

## IOWA

**Society News.**—Dr. Daniel G. Lass, Ocheyedan, has been elected president of the Northwest Iowa Medical Association, and Dr. Walter R. Brock, Sheldon, vice president.

**Personal.**—Dr. Jeannette Jongewaard has been appointed medical adviser at Iowa State College, succeeding Dr. Mary J. Sheldon, resigned.——Dr. Jesse L. McElroy, formerly of St. Mark's Hospital, New York, arrived in Iowa City, November 12, to take up the duties of superintendent of the University of Iowa General Hospital, succeeding Dr. Bert W. Caldwell, resigned.——Dr. Lee E. Shafer, Davenport, has been elected president of the Scott County Medical Society.

## KENTUCKY

**New Health Officer for Louisville.**—The board of public safety, November 28, approved the appointment of Dr. Clarence H. Harris as city health officer of Louisville, to succeed Dr. Evan Ellis Owen, whose resignation was accepted as of December 1. Dr. Harris is a past president and treasurer of the Jefferson County Medical Society, and former county health officer.

**Personal.**—Dr. Oliver P. Henry tendered his resignation as county health officer of Mount Sterling, October 30.——Dr. Felix G. Fowler was appointed physician for the negro schools by the board of public safety at Louisville, November 10, to succeed Dr. Percy R. Peters.——Dr. Robert D. Higgins, Ashland, has been reelected director of the Boyd County Board of Health for a period of four years.

## LOUISIANA

**Personal.**—Dr. E. Denegre Martin, New Orleans, was elected president of the Southern States Association of Railway Surgeons at the meeting of the Southern Medical Association in Dallas, Texas, November 9-12.——Mr. John M. Pugh took up his new duties as director of the dairy division of the Louisiana State Board of Health, December 1.——Dr. Lucy S. Hill, Washington, D. C., recently joined the staff of the bureau of child hygiene, infancy and maternity division of the state board of health.

**New Building for Charity Hospital.**—A cordial invitation was extended to the public to visit the new $335,000 building of the Charity Hospital, New Orleans, November 30, previous to its being placed in service the following day. The building faces on Tulane Avenue, and has a capacity of 120 beds, which will be for white female medical patients. An appeal to the public for funds for this building made in March, 1923, resulted in contributions of more than $289,000 to which interest and other small sums were added, making about $310,000. The deficit will be reduced by the payment of a pledge from Jefferson parish for $10,000; Tangipahoa parish also pledged by a former police jury, $15,000, according to the *Times-Picayune*. The hospital now has a total of 1,250 beds.

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## MICHIGAN

**Personal.**—At the recent convention in Lansing of public health officers, Dr. Charles A. Neafie, Pontiac, was elected president of the Michigan Public Health Association; Dr. William J. V. Deacon of the Michigan State Department of Health, secretary-treasurer, and among others, Dr. John Sundwall, Ann Arbor, professor of hygiene and public health, University of Michigan Medical School, was elected a director.

## MINNESOTA

**Society News.**—Dr. Naboth O. Pearce addressed the Hennepin County Medical Society, November 25, on "Dietary Considerations in the Care of Diabetic Children," and Dr. Jennings C. Litzenberg, on "Some Newer Phases of Sterility."——Dr. Angus W. Morrison addressed the Hennepin County Medical Society, December 2, on "Mental Hygiene and the Physician," and Dr. Richard R. Cranmer on "Differential Diagnosis in Acute Abdominal Disease."——At the regular meeting of the Minneapolis Academy of Medicine at the Town and Country Club, Minneapolis, December 9, Dr. Winford P. Larson gave an address on "The Value of Surface Tension Depressants in Detoxifying Bacterial Toxins for Immunization," and Dr. George E. Fahr on "The Fatigue Factor in Cardiac Failure."

## MISSOURI

**The Adcox Confession** (Continued).—When the United States entered the World War, the demand for fraudulent diplomas doubled. Dr. Robert Adcox says in the St. Louis *Star*. The chiropractors, osteopaths, mechanotherapy fakers, and electrotherapy and hydrotherapy quacks, "who had been clinging to the coat tails of medicine," wanted commissions in the

army medical corps. He says that low-grade colleges graduated ignoramuses in droves and that students in first-class institutions deserted their classes to go to "mill schools" to graduate or to purchase diplomas outright. Adcox says that hundreds of quacks and charlatans wore uniforms, that some young chap who felt called to serve his country rung his door bell every few minutes, and that he did his "bit" by assisting the government to obtain "the needed doctors." Now at 63, "in these days of life's autumn," Adcox says he is awakened by a cry which others cannot hear but which he knows is that of victims who died in training camps—victims of charlatans. The demand for diplomas continued after the armistice, it is said, so it was necessary to open new agencies and branch offices of the "National Medical Diploma Mill." Owen T. Owen was active in Chicago; Frank J. Kenney in Washington and Baltimore; Ralph A. Voigt, who now had his M.D. and was out of the army, in Kansas City, and others were "on the ground" in Boston, New York, Philadelphia, Los Angeles, New Orleans, Houston, Dallas, Minneapolis, Detroit, San Francisco, Memphis and a score of other cities. Barred from association with respectable members of the profession, the charlatans felt the urge to join something that would offer at least a cloak of respectability, so "medical societies" multiplied like rabbits. Thus there were created hybrid societies which for a fee issued certificates of membership. "The Incorporated Society of Science, Letters and Arts of London, Limited," and the "Italian Physico-Chemical Academy" continued to sell "their stuff" long after being exposed, the former conferring an "F.S.S.C. Lond.," which any quack could purchase for $5 by writing to London. These letters stand for fellow of the Incorporated Society of Science, Letters and Arts of London, and mean nothing. The "Academie Physico-Chemique Italienne" was operated by two nonscientific men, who mailed hundreds of letters from Palermo to American physicians, informing them that they had been nominated as honorary members of the academie by the council and had had conferred a medal and diploma. Imagine, Adcox says, how the quacks went after these medals. But they were caught by a joker in the constitution and had to pay a fee for their honors. The general public and even the public health authorities have no idea, he says, of the extent of operations of these mills. With some state boards willing to accept almost any credentials, the problem confronting Adcox was how to obtain licenses for persons too ignorant to pass an examination. Having been offered $1,000 for a license to practice in a Southern state, Adcox decided to enter this field.

## NEW YORK

**Hospital News.**—The Troy Hospital, Troy, celebrated its diamond jubilee, November 18, at Music Hall, with appropriate ceremonies, and among the speakers were Dr. Joseph Collins, New York, and the Hon. Alfred J. Talley of the Court of General Sessions, New York. Dr. Melville D. Dickinson, chief of the medical staff of the hospital, presented Mayor Clinton, who presided at the ceremonies.

**Safety Congress.**—The Ninth Annual Industrial Safety Congress and Exhibit was held in Syracuse, November 30-December 3, under the auspices of the State Department of Labor and with the cooperation of the Medical Society of the State of New York and the New York State Society of Industrial Hygiene. There were discussions, the reading of papers and a safety exhibit. Industrial accidents in New York last year numbered more than 374,000.

### New York City

**Physicians' Buildings.**—A twenty-two-story office building for the use of physicians is to be erected on Fifty-Ninth Street between Sixth and Seventh avenues, facing Central Park.——A new office building for Brooklyn physicians is to be erected at 128-130 Livingston Street by a firm of New York builders.

**Personal.**—Dr. Samuel Weiss has been appointed adjunct professor of gastro-enterology at the New York Polyclinic Medical School and Hospital.——Dr. Adolph Jacoby has been promoted to assistant professor of gynecology on the staff of Dr. Walter T. Dannreuther at the New York Post-Graduate Medical School and Hospital.——Friends of Dr. Charles Norris, the city's chief medical examiner, gave a dinner in his honor, November 28, at the Hotel McAlpin. Dr. Norris recently returned from abroad, according to the New York *Medical Week*, fully restored in health.——Dr. William Seaman Bainbridge gave a dinner in honor of Sir William Arbuthnot Lane, London, at the Union League Club, November 25, which was attended by sixty-five physicians.

**Society News.**—Dr. A. M. Pennell, Bannu, Hindustan, addressed the Women's Medical Association at the New York Academy of Medicine, November 18, on "Medical Work Among the Women of India."——Dr. Binford Throne has been elected president of the Brooklyn Dermatological Society; Dr. John C. Graham, vice president, and Dr. Ernest Almore Gauvain, secretary-treasurer.——At the annual meeting of the New York County Medical Society, November 23, Dr. William P. Healy was elected president; Drs. Henry S. Patterson and John Douglas, vice presidents; Dr. Daniel S. Dougherty, secretary, and Dr. James Pederson, treasurer.——Dr. O. Paul Humpstone has been elected president of the Kings County Medical Society to succeed Dr. John E. Jennings; Dr. Thurston S. Welton, vice president, and Dr. Thomas M. Brennan, secretary, reelected.——Dr. Martin L. Janes addressed the Ward's Island Psychiatric Society, November 25, on "The Therapeutic Value of Blood Transfusion in Certain Psychoses."——At the annual election of the New York Academy of Medicine, December 3, Dr. Charles A. Elsberg was chosen vice president for three years, and Drs. Nathan E. Brill and Eugene H. Pool trustees for five years.

## OHIO

**Medical Mayors.**—At the elections in Ohio last month, Dr. Samuel M. Mehaffey was elected mayor of Dennison; Dr. Claud C. Craig, mayor of Urbana, and Dr. Charles T. Gallagher, mayor of Mount Sterling.

**Joint Study of Expert Testimony.**—The Cleveland Bar Association and the Academy of Medicine of Cleveland are conducting a study of problems involved in medical expert testimony. The committee will study these questions: (1) What has been done in other states in the past? (2) If an impartial group of medical expert witnesses could be used, should this group be established by the court or by the medical profession through its organizations? (3) What would be the effect of such a group on procedure in trial cases? (4) How should such a group be compensated for their services? and (5) What questions of constitutionality would be involved in any proposed change? The members of the committee are Drs. George E. Follansbee, Vernon C. Rowland, Charles W. Stone and Jacob E. Tuckerman, and Paul Holland, John A. Cline, C. A. Niman and Herman J. Nord of the bar association.

**Society News.**—Dr. Carroll W. De Courcy, Cincinnati, addressed the Wood County Medical Society, Bowling Green, November 19, on "Arthritis." Dr. Frank V. Boyle was elected president of the society, Dr. Edward H. Mercer, vice president, and Dr. Orval I. Nesbit, secretary-treasurer.——Dr. David H. Morgan will address the Medical Section of the Summit County Medical Society, Akron, December 22, on "Encephalitis Lethargica and Its Sequelae"; Dr. James G. Blower will address the Surgical Section, December 8, at the People's Hospital on "Cancer of the Breast."——Members of the Jefferson County Medical Society gave a testimonial dinner in Steubenville, recently, to honor Dr. James C. M. Floyd, who has completed fifty years in the practice of medicine, forty-three of which have been spent in the city of Steubenville; flowers and a silver loving cup were presented to Dr. Floyd, and among those who spoke were Dr. Benjamin A. McClelland, Xenia; Dr. Benjamin F. Harden, Wellsburg.

## OKLAHOMA

**New Full-Time Health Officers.**—The three new full-time county health units to be established soon in McCurtain, Bryan and Kay counties will be in charge of Dr. Robert D. Williams, Dr. Grady F. Mathews, and Dr. David M. Cowgill, respectively.

**Medical School Building Opened.**—The new $100,000 medical building of the University of Oklahoma at Norman, which was completed last February, was formally opened to the public, November 23, when more than 4,000 persons saw the various departments in operation. It is a reenforced concrete structure with brick veneer tile roof, three floors and a basement, and is one of three units of a proposed building which will be completed when funds are available.

**Birth Registration.**—Six representatives of the state department of public health are now engaged in making a state-wide survey to determine the completeness of registration of births. They are visiting every school in the state to interest parents in birth registration. The cooperation also of every county superintendent of health and the clergy have been obtained; 500 local registrars will assist in obtain-

ing the support of women's clubs; every organized community center will be urged to see that the exact date and place of birth of every child under 1 year of age is forwarded to the state department, and an addressed postcard will be placed in every home in the state where a birth has occurred in the last year.

### Philadelphia

**Dr. Lloyd Honored.**—Members of the Blockley Ex-Resident Association, at their thirty-ninth annual banquet, December 1, honored Dr. James H. Lloyd on the occasion of his birthday; Dr. Lloyd has served for many years as chief of the neurologic service; among the speakers were Dr. Daniel J. McCarthy, president and toastmaster; Dr. Charles W. Burr, chief of the neurologic service in 1896; Dr. Joseph C. Doane, superintendent, Philadelphia General Hospital; Dr. George H. Fox, New York, a resident in 1869, and Dr. Isaac H. Moore, Seattle, '78. Dr. David Riesman was elected president for the coming year.

**Medical Lectures.**—Dr. Simon Flexner, director of the Rockefeller Institute, delivered the third Weir Mitchell Oration, December 9, at the College of Physicians, on "The Advancement of Epidemiology Through Experiment."——Dr. Edward W. Archibald, professor and director of the department of surgery, McGill University Faculty of Medicine, Montreal, delivered the Mutter Lecture of the College of Physicians, December 11, on "The Pathology of the Compressed Lung; Lipoidal Injections of the Tuberculous Lung; Results of Surgical Treatment in Unilateral Pulmonary Tuberculosis."——Dr. William F. Rienhoff, Jr., department of surgery, Johns Hopkins University Medical School, Baltimore, addressed the Pathological Society, December 10, on "The Histologic Changes in Exophthalmic Goiter Following the Administration of Iodin."

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### WASHINGTON

**Personal.**—Dr. Percy P. Cooley, Monroe, who was recently appointed as health officer of Snohomish County and physician at the Aldercrest Sanatorium, to take effect, Jan. 1, 1926, has resigned.

**Society News.**—Dr. C. C. Tiffin, Seattle, who has been studying cretinism and goiter in Switzerland, addressed the Jackson County Medical Society, Medford, Ore., November 18, and the Thurston County Medical Society, Olympia, November 20, on "Cretinism and Its Relation to Goiter."

**Attempt to Restore Sanipractors' Licenses.**—A bill introduced in the legislature now in session, if passed, will restore about ninety licenses of sanipractors, which were recently revoked for having been obtained from a "diploma mill" in Seattle. The bill would create also a separate board of examiners for sanipractors, which would offer examinations in anatomy, physiology, hygiene, pathology, kinesiology, herbology, obstetrics, toxicology and other subjects. Sanipractic is defined as "the science and art of applied prophylactic and therapeutic sanitation, which enable the physician to direct, advise, prescribe or apply food, water, roots, herbs, light, heat, exercise, active and passive, manipulation, adjusting tissue, vital organs and anatomical structure by manual, electrical instruments or appliances, or other natural agency, to assist nature restore a psychological and physiological interfunction." The house committee has reported the bill unfavorably.

### WYOMING

**Outbreak of Botulism.**—The four children of Mr. and Mrs. A. H. Collins, Rawlins, are reported to have died suddenly of botulism following the eating of sandwiches made from canned meat, November 21. The father, who was also very ill, recovered. State and local health officials are investigating the entire stock of canned meat in the city.

### GENERAL

**New Editor Appointed.**—The board of trustees of the American Dental Association at the recent annual meeting, Louisville, Ky., elected Charles N. Johnson, D.D.S., Chicago, editor of the *Journal of the American Dental Association*, to succeed Dr. Otto U. King, who becomes business manager of the Association and retains the office of general secretary. Dr. Johnson was formerly president of the American Dental Association and for many years editor of *Dental Review*.

**Regional Institute for Tuberculosis Workers.**—Under the auspices of the National Tuberculosis Association and the tuberculosis associations of the New England States, New York, New Jersey, New York City and Brooklyn, there will be an institute for tuberculosis workers held in New York, Jan. 4-20, 1926, which will be conducted by round table conferences. The courses include three divisions: (1) "Methods of Antituberculosis Work"; (2) "Programs of Antituberculosis Work"; (3) "Relation of the Tuberculosis Campaign to Other Social and Public Health Movements." Membership in the institute will be by invitation following personal application, which should be sent to Philip P. Jacobs, 370 Seventh Avenue, New York.

**News of Epidemics.**—An outbreak of eight cases of smallpox in the village of Sawyerville, Ala., was reported, November 19, and more than 200 cases of smallpox in Pottawattamie County, Iowa, November 29, the latter of a mild type. ——The city and county health officers of Evansville, Ind., took steps Thanksgiving Day to check an epidemic of more than forty cases of scarlet fever in the city and about twenty cases in rural communities. There were seven new cases of scarlet fever reported in the thirty-six hours, ending November 28, in Evansville, bringing the number of cases in the city to ninety.——An epidemic of fourteen cases of scarlet fever was reported in the village of Morgan, N. J., November 25, and another in the Wilson School, Camden, N. J., on the same date.——There were fourteen cases of scarlet fever in quarantine in Muscatine, Iowa, November 28.——The city schools of Carlisle, Ky., were ordered closed by the county health officer for a few days, November 25, to permit fumigation of the buildings to prevent the spread of diphtheria; at that time there were three cases in that city.——The public schools of McGuffey, Ohio, were closed, November 20, it is reported, on account of an epidemic of scarlet fever.

**"Tranquillity."**—It has been proposed that the national home for aged and incapacited physicians shall be "home" in the fullest sense of the word and that it shall be called "Tranquillity." The first unit, founded four years ago in Caneada, N. Y., has been successful. There have been hundreds of cases that could not be accommodated. It has been necessary to appeal to the public to secure funds to build a home of national size with smaller units throughout the country to meet sectional needs. The project was laid before some of the ablest physicians and before a number of prominent persons outside the medical profession, and their unanimous belief was that the public would support a campaign to raise funds. The campaign was recently opened with headquarters in the Times Building, Forty-Second Street and Broadway, New York City, to which office subscriptions should be sent. Several million dollars will be required. The home is not to be in any sense luxurious. It will be a plain, substantial institution, well furnished, to meet the average wants of the average man. The inmates will be encouraged to employ their time; a well appointed laboratory is contemplated wherein those whose faculties permit may still pursue their studies with the hope that medicine may benefit by their investigations; it is also contemplated that arrangements shall be made for physicians who, falling ill, may need a haven in which to win back their health. Those who subscribe $5,000 will be designated as Benefactors; those who subscribe $2,500 will be designated as Donors; $1,000, Patrons; $500, Life Members, and $100, Sustaining Members. None of the officers or directors of the home are paid as such nor will they participate in the funds subscribed.

**Society News.**—At the annual meeting of the Central States Pediatric Society, Chicago, November 6-7, Dr. George M. Tuttle, St. Louis, was elected president; Dr. Frederick C. Rodda, Minneapolis, vice president, and Dr. Henry T. Price, Pittsburgh, secretary-treasurer, reelected.——Dr. James Y. Welborn, Evansville, Ind., was elected president of the Ohio Valley Medical Association at the twenty-sixth annual meeting in Indianapolis, November 11; Drs. Daniel N. Eisendrath, Chicago, Emmet F. Horine, Louisville, Ky., and Dr. Joseph E. Pirrung, Cincinnati, vice presidents, and Dr. Benjamin L. W. Floyd, Evansville, Ind., secretary-treasurer, reelected. Among the speakers were Dr. Joseph Miller, Chicago; Dr. Bethuel B. Vincent Lyon, Philadelphia; Dr. William H. Foreman, Indianapolis, and Dr. Martin H. Fischer, Cincinnati. The next annual meeting will be in Louisville.——The Midwinter Session of the American Electrotherapeutic Association and affiliated Eastern societies will be in the New York Academy of Medicine, Jan. 6-7, 1926; there will be clinical demonstrations at the Reconstruction and the Beekman Street hospitals; among others, Dr. William

B. Snow, New York, will discuss "Treatment of Local Septic Infection"; Dr. Sinclair Tousey, New York, "Dangers of Roentgen Rays"; Dr. William T. Johnson, Philadelphia, "The Value of Static Currents in Preventing Baldness"; Dr. William D. McFee, Haverhill, Mass., "Physiotherapy in the Treatment of Arthritis"; Dr. Morris Fishbein, editor of THE JOURNAL, "The Council on Physical Therapy"; Dr. Wendell C. Phillips, New York, President-Elect of the American Medical Association, and Dr. Horatio B. Williams, Dalton, professor of physiology, Columbia University College of Physicians and Surgeons, "The Council on Physical Therapy." ——The American Psychological Association will hold its annual meeting, December 28-30, at Cornell University, Ithaca, N. Y. The annual dinner and the presidential smoker will be Tuesday evening.

**Bequests and Donations.**—The following bequests and donations have been announced recently:

The Huggins Hospital, Wolfeboro, N. H., $2,000, by the will of the late Lyford A. Merrow for the benefit of patients from Ossipee, and $5,000 to the Boston University, and $10,000 for a fund, the interest on which is to assist young persons from Ossipee to obtain an education.

The New England Deaconess Hospital, Boston, the residuary estate after certain bequests to relatives and certain churches, of Elzora A. Purington, Portland, Me.

The Springfield Hospital, Springfield, Vt., the First Methodist Church of Springfield and the town of Springfield, a total of $24,000, by the will of the late C. F. Wilson, New York.

The Virginia Baptist Hospital, Lynchburg, Va., a gift of $75,000 from Mrs. Annie C. Mundy, Natural Bridge, Va., for the construction of a second unit as a memorial to her husband, her daughter and self.

Jefferson Hospital, $5,000, to establish a bed in his mother's memory, by the will of the late Dr. Duncan L. Despard, Philadelphia.

The Home for Incurables, Chestnut Hill, Pa., $5,000; the Pennsylvania Institution for Instruction of the Blind, $2,000, and the Chapin Home for the Aged Blind and the West Philadelphia Homeopathic Hospital, each $1,000, by the will of Miss Louisa T. Pfaff, Philadelphia.

The Pennsylvania Hospital, $50,000, and the Children's Hospital, Philadelphia, $250,000, by the will of the late Wilson Catherwood.

The Hospital for Ruptured and Crippled Children, New York, $20,000, and the New York Association for the Blind, $25,000, by the will of the late William Carr.

Lenox Hill Hospital, New York, $50,000, by the will of the late Rudolph J. Schaefer.

The Amsterdam City Hospital and the Loomis Sanatorium, $5,000 each, by the will of the late Nelson S. Clark.

The Home for the Aged of the Little Sisters of the Poor, New York, $5,000; All Souls Hospital, Morristown, N. J., and St. Mary's Catholic Orphan Asylum, Newark, N. J., each $3,000, by the will of the late Bernard J. Coleman.

The Jewish Hospital, Philadelphia, $100,000, for the erection of a wing for the aged and infirm, and the Jewish Foster Home and Orphan's Asylum, Philadelphia, $60,000, by the will of Miss Julia Mayer.

The Children's Home, New York, $2,000, by the will of the late Christian Kress.

St. Luke's Hospital, Bellingham, Wash., $10,000, by the will of the late John Williams, Deming, N. M.

Mr. Benjamin N. Duke, Durham and New York, has recently contributed $5,000 to cancel debts of the new Lincoln Hosital at Durham for colored people. In fireproof structure and character of building and equipment this new hospital ranks with the best in the state. Mr. Duke had previously contributed $25,000 in its construction.

The Salem Hospital, Salem, Mass., $150,000, the Society for the Relief of Aged and Destitute Women, Salem, $10,000, and the Bertram Home for Aged Men, $5,000, by the will of the late Robert Osgood of Salem.

The Elliott Hospital, Manchester, N. H., $10,000, of which a sufficient sum shall be set aside for a free bed for inhabitants from Candia, by the will of the late Henry W. Moore of Candia.

St. Barnabas Hospital, Newark, N. J., $15,000, by the will of the late Charles H. Hampton of East Orange.

Seton Hospital, and Sisters of the Poor of St. Francis and Home for the Aged of the Little Sisters of the Poor, New York, with others, share in the residuary estate, amounting to about $8,000, of the late Mary Jackson.

Lake County Memorial Hospital, Painesville, Ohio, $10,000, by the will of the late Stella L. Cummings, to endow a charity ward.

The will of the late Marion E. Griffin, Spencer, Iowa, provides for a bequest of $50,000 to equip a county hospital, to be erected if authorized by a vote of the people of Clay County within five years; $5,000 to the Orphans' Home of Council Bluffs, Iowa; $5,000 to the American Home Finding Society, Ottumwa, Iowa; $10,000 to the Salvation Army of Iowa, and $10,000 to the American Red Cross of Iowa.

Mount Sinai Hospital, New York, $1,000, by the will of the late Mrs. Clara A. Fenchtwanger.

St. Catherine's Hospital, Brooklyn, $800, by the will of the late Helena Pappon, Jamaica, L. I.

Mount Sinai Hospital, New York, $5,000; Presbyterian Hospital and St. Luke's Hospital, New York, and the New York Association for the Blind, each $500; the United Hebrew Charities, New York, $2,000, by the will of the late Morris J. Hirsh.

The Associated Hospitals of New York, $169,827, and the Servants of Relief for Incurable Cancer, New York, $339,654, by the will of the late Henry Evans.

The Fifth Avenue Hospital, New York, $200, by the will of the late Marguerite A. Gocks.

The Greenwich Hospital, Connecticut, and the Roosevelt Hospital of New York, each $5,000, by the will of the late Elijah W. Sells.

The Skin and Cancer Hospital, New York, and the Old Ladies' Home, Hackensack, N. J., each $1,500, by the will of the late John Flood.

The Skin and Cancer Hospital, New York, and the Old Ladies' Home, Hackensack, N. J., each $1,500, by the will of the late Edward F. Gordon.

The Harvard University Medical School, Boston, $5,000, by the will of the late Dr. John W. Elliott.

Mount Sinai Hospital, New York, $3,000; the Montefiore Home for Chronic Invalids and the Home for Aged Infirm Hebrews, $2,000 each; the Lebanon Hospital Association and Beth Israel Hospital, $1,000 each; the Hebrew Orphan Asylum, $5,000; the Henry Street Settlement, the Association for the Blind, the Tuskegee Institute and the Jewish Consumptive Relief Society of Denver, each $500, by the will of the late Moses Ottinger, New York.

## FOREIGN

**Gift for Medical Building.**—Mr. M. Tatsuke has donated 500,000 yen for the erection of a hospital and medical institute building in Osaka at the Kyoto Imperial University, and the gift has been accepted. The medical institute probably will be named the Tatsuki Institute.

**Record Low Birth Rate in England.**—The registrar general of England issued statistics, December 2, it is reported, which showed that fewer children were born in England last year than in any previous year on record except during the World War. The birth rate was said to be 18.8 per thousand, which is slightly below that of France (18.9).

**Dr. Farkas Receives Orthopedic Prize.**—The five-year prize known as "The Humbert I Prize" has been awarded to Dr. Aladar Farkas, Budapest, for his work on "Causes and Pathogenesis of Scoliosis" by a committee made up of Profs. Vittorio Putti, Riccardo D. Vedova and Francesco Delitala. The previous recipients of this prize have been Drs. Vulpius, Schulthess, Vangetti and Murk Jansen (Germany, Switzerland, Italy and Netherlands).

**Acid Rain.**—During the last year, according to the *Lancet*, 615 tons of organic matter—nitrates, bitumen, calcium salts, sulphates and chlorids—came down with the rain on each square mile of Liverpool's most densely populated districts. The bronze of the Queen Victoria monument was so acted on by the sulphuric acid in the rain water that the copper sulphate formed sunk to a distance of 4 inches in the Portland stone on which the monument stands.

THE SLIP FOR SUBSCRIPTION AND FELLOWSHIP DUES IS IN THIS ISSUE.

**Taxes Peril the Nobel Prizes.**—For the first time since the Nobel prizes were given twenty-four years ago, the directors have decided this year to withhold all five of the prizes. *Science* notes that the reason for this decision is said to be a lack of qualified candidates and a need for funds for the Nobel Library and the Physical and Chemical Institute, both of which were founded in Stockholm as a part of the Nobel memorial. High taxes seem to be imperiling the Nobel prizes, it is said. The taxes on the prizes in 1901 were 83,042 crowns and in 1923 were 578,006 crowns, whereas in this period the prizes decreased from 709,234 to 574,676 crowns. The Nobel family has petitioned the Stockholm government to exempt the foundation from taxes. There are Nobel prizes in physics and chemistry, awarded by the Swedish Academy of Science; in medicine or physiology, awarded by the Stockholm Faculty of Medicine; in literature, awarded by the Swedish Academy of Literature, and the Nobel peace prize, awarded by a committee of five elected by the Norwegian Storthing.

### Deaths in Other Countries

Dr. **H. Fehling,** Baden, for many years professor of gynecology at Strasbourg, aged 78.——Dr. **L. W. Weber,** director of the municipal hospital for nervous affections, Chemnitz. ——Dr. **H. Kuhnt,** emeritus professor of ophthalmology, Bonn, one of the two founders of the *Zeitschrift für Augenheilkunde* in 1899.——Dr. **P. J. Schultz,** chief of the orthopedic department of the Münster surgical clinic and author of works on deformities and bone lesions. His skull was fractured in a fall during a boxing bout.——Dr. **Paul Heger,** emeritus professor of physiology, Brussels, aged 80.——Dr. **Lambinet,** Liége, chief of the bacteriologic service at the university and a pioneer in study of hookworm.——Dr. **Boppe,** Nancy, army *médecin inspecteur,* killed in an automobile accident.——Dr. **F. St. George Mivart,** London, formerly medical officer of the Ministry of Health, November 5, aged 70.——Dr. **John Newport Langley,** professor of physiology, University of Cambridge for the last twenty-two years, for more than thirty years editor of the *Journal of Physiology,* formerly president of the new Neurological Society of Great Britain, and Baly Medalist of the Royal College of Physicians of London in 1903, November 5, aged 73.——Dr. **Edward J. Donville,** consulting surgeon to the Royal Devon and Exeter Hospital, recently, aged 76.

## CORRECTION

**Chief Surgeon at Union Hospital.**—THE JOURNAL noted, September 26, that Dr. Duke R. Gaskins, Harrisburg, Ill., had been appointed chief surgeon and manager of the Union Hospital, West Frankfort. Dr. J. E. Williams is chief surgeon at this hospital, and Dr. Gaskins' appointment was as assistant surgeon and manager.

# Government Services

### Annual Report of Surgeon General

The mortality and the venereal disease rates in the army are the lowest in history, according to the annual report of Surg.-Gen. Merritte W. Ireland. The general death rate for 1924 was 3.82 per thousand, as compared with 3.91 the preceding year, when the rate for the first time in army history fell below 4 per thousand. The death rate for disease in 1924 was 1.94 per thousand, which is the first time it has been below 2 per thousand. In the last twenty-five years the incidence of venereal diseases has declined 69 per cent. and that of malaria 98.7 per cent. During the year, the medical department of the army demonstrated the method of transmission of dengue by mosquitos, and the research on this problem was as complete, according to medical officers, as that conducted on yellow fever by Walter Reed and his associates in Cuba following the Spanish-American War. Relatively greater progress has been made in the army in the prevention of deaths from disease than from external causes. Suicide held its place as the chief cause of death, with tuberculosis second, automobile accidents third, and airplane and balloon accidents fourth.

The report showed that in the eight years, 1917 to 1924, there were 874 deaths resulting from airplane accidents, not including World War battle casualties; of that number, 520 were officers. For the last five years the air accident death rate for officers was 26.95 per thousand, while in 1924 the rate was 21.04. "The ratio of crashes for the heavier-than-air machines," General Ireland said, "has decreased from one crash to 200 flying hours in 1921, to 1 crash to 500 flying hours in 1924, and the fatalities from one to 955 flying hours in 1921 to one to 3,365 flying hours in 1924." A tabular presentation of the 256 crashes in 1924 showed that 138 occurred in landing, that "poor piloting and inexperience" was held responsible for 84, and engine trouble for 58. While 40 were killed or died as a result of injuries, 35 were seriously injured and 55 were slightly injured; 284 persons in planes, which crashed, escaped injury entirely. Establishment of airplane ambulances at each air service station is recommended, together with the creation of an airplane ambulance squadron of twenty-five planes for each field army organization. The planes would have a capacity for six litters or eight sitting patients. A squadron of this type, the report states, "can transport as many patients 100 miles in one hour as a railway hospital train in four or more hours," and can receive patients much nearer the fighting area.

### Veteran's Bureau Resignations

The following medical officers of the U. S. Medical Bureau resigned on the dates indicated: Dr. James S. Burger, hospital No. 65, St. Paul, Minn., October 31; Dr. Howard T. Child, hospital No. 95, Northampton, Mass., August 8; Dr. Lyle G. Ellis, hospital No. 97, Chillicothe, Ohio, September 28; Dr. John H. Graff, September 19; Dr. Antonio Mayoral, hospital No. 80, Fort Lyon, Colo., September 15; Dr. Walter D. Martin, Central office, Washington, D. C., July 31; Dr. Oliver J. Miller, hospital No. 27, Alexandria, La., August 30; Dr. Elmer L. Smythe, hospital No. 59, Tacoma, Wash., October 15, and Dr. William M. Stinson, hospital No. 72, Harrison, Mont., August 15.

### Army Personal

Major Charles E. MacDonald, M. C., has been recommended to the adjutant general by Mr. George Curry of the International Boundary Committee for the Distinguished Service Cross for service with him in Samar, P. I., from 1905 to 1907.

### Noncommissioned Officers of Medical Department

A course of instruction for noncommissioned officers of the army medical department has been started at Carlisle Barracks, Pa., to assist in raising the standard of noncommissioned officers. This year's class has fifty-two members —twenty-six from the regular army, twenty-two from the National Guard, and four from the U. S. Navy. At the opening exercises of the school, addresses were given by Lieut.-Col. Charles R. Reynolds, Commandant, and Major Garfield L. McKinney, director of the school. The total number of demerits any member of the class can get and still be eligible for graduation from the course is twenty-five.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Nov. 28, 1925.

### Lay Radiographers and Medical Reports

The Society of Radiographers has passed a rule preventing lay members from making any report or diagnosis on any roentgenogram or screen examination, but it was agreed that this rule should be interpreted to allow a lay radiographer (in the absence of a medical radiologist) to describe to a physician the appearances seen in a roentgen-ray examination, so as to assist him in making a diagnosis. The Institution of Electrical Engineers, which took part in the foundation of the Society of Radiographers and nominated six out of the eighteen members of its council, has withdrawn its nominees and terminated the institution's connection with the society, because it considered that the new rule would materially lower the professional status of nonmedical radiographers. An attempt had been made previously by a representative of the institution to modify the proposed rule by moving that it be amended so as not to be applicable to members of the society who had been engaged in roentgen-ray work for not less than fifteen years. Such members would thus be allowed to interpret roentgenograms, make screen examinations and diagnoses, and treat patients. Objection was taken to this by the General Medical Council, which pointed out that if such a clause was inserted in the rule the medical members of the society would find themselves in the untenable position of associating with unqualified persons who were performing medical functions without medical training or without immediate personal medical supervision. This decision the medical members of the Society of Radiographers could not, of course, dispute. Nevertheless the Institution of Electrical Engineers maintained its position. A large proportion of the radiographers, however, have expressed agreement with the new rule.

### The Demand of Osteopaths for Registration

As stated in previous letters, there are now a large number of osteopaths in this country, and a few physicians have joined their ranks. Osteopathy is evidently, for the time at any rate, a paying proposition, and the agitation for the legal status that would be conferred by state registration continues. In a letter to the *Times* advocating registration, the vice president of the British Osteopathic Association has the audacity to describe osteopathy as "a system which has scientifically classified the entire field of mechanicotherapeutics" and refers to the manifesto of his association in which osteopathy is defined "as that system of the art of healing which regards the structural integrity of the body as the most important single factor in the maintenance of health." He asserts that osteopaths have to undergo a training as rigorous as that required in any other branch of the medical profession. He complains that there are three times as many unqualified "pretenders" as there are "qualified osteopaths." He goes on to talk of "the attacks of the general medical council on the fully qualified osteopaths." This is absurd, for the general council does not concern itself with irregular practitioners at all and, indeed, has no power over them, its jurisdiction being confined to qualified physicians. In a letter to the *Times*, written with all his characteristic cleverness, Bernard Shaw, who is always a destructive critic and an advocate of the revolutionary and the paradoxical, falls into the same error. He describes the general medical council as a "trade union of the most antisocial type" and as "preventing the public from addressing itself to the task of

calling in any unregistered practitioner who is in competition with those on the register, while at the same time allowing the qualification for that register to remain in many respects not merely useless and out of date, but positively poisonous and murderous." Shaw considers the qualification out of date because physicians are not taught what he regards as the wonderful technic of bone-setters, osteopaths and other irregulars. His rôle as a destructive critic, in which he revels, has of course prepared him for this attitude. But as a man of the world, if for no other reason, he should know that neither the general medical council nor laws of this country prevent any one from practicing any art he likes to profess. This is a very free country, and we have nothing corresponding to the French "illegal practice of medicine."

### Cancer Research

At a meeting of the general committee of the Imperial Cancer Research Fund, Sir Humphry Rolleston, chairman of the executive committee, reviewed the report on the year's work made by the director, Dr. J. A. Murray, F.R.S. Dr. William Cramer had investigated the influence of innervation on the experimental production of skin cancer by tar. He deprived an area of skin in mice of the nerve supply and then painted it twice weekly until cancer supervened. This occurred only after a longer course of tarring than was necessary in normal animals. Therefore, absence of nerve supply certainly did not predispose to the genesis of cancer, as had been suggested. The nerves grew again into the denervated area, so that the experiment did not give an absolute answer to the question whether, if the renewal of the nerve supply could be prevented, cancer would not be produced at all. Dr. G. M. Findlay made experiments to determine whether it was possible to reproduce in animals the remarkable sequence reported in the human subject from time to time, in which an accidental tar burn had been followed after a short interval by typical progressive carcinoma at the point of injury. A large number of mice received a single application of hot tar on a small area of the back. Slight swelling and reddening of the skin followed but soon subsided. No further change was observed until the lapse of a year, when three mice showed typical cancer at the site of inoculation application. This result is important, as it shows that general intoxication with tar, which has been invoked by many workers as important in the causation of tar cancer, is, to say the least, not essential. Dr. A. M. Begg has made investigations on the Rous fowl sarcoma and the infective lymphosarcoma of the dog. This work took a new orientation since the publication of the work of Dr. W. E. Gye, who is now collaborating informally with Dr. Begg. Dr. Begg's investigations are progressing satisfactorily and, it is hoped, will soon be ready for publication. The important work of Gye and Barnard is calling for the most careful repetition with as many kinds of tumors as possible. This work is now occupying much of the time of the scientific staff of the Cancer Research Fund.

### A Postgraduate School for London

It seems as if the difficulties of establishing a postgraduate school in London, against which medical reformers have struggled in vain for many years, will at last be overcome with the aid of the government. Mr. Neville Chamberlain, minister of health, speaking as the chief guest at the annual dinner of the Royal Society of Medicine, said that the establishment of a postgraduate school in London ought to be brought into operation at the earliest possible moment. Many valiant efforts to do something of the kind had been made in the past, but without success. The time, he thought, had come to try again. Perhaps with cooperation between the medical profession and the ministry of health, and with the good will of some of our medical colleagues beyond the seas, it might be possible to put this question on a new footing. He had already been able to secure the assistance of a number of eminent representative physicians and surgeons to serve on a committee over which he was going to preside. He trusted that in the next year or so they might congratulate themselves on the accomplishment of their desires.

### The National Collection of Type Cultures

The Medical Research Council has just issued a second edition of the catalogue of the collection maintained at the Lister Institute of Preventive Medicine. More than 2,000 living strains of bacteria and protozoa affecting animals and plants are maintained. In the single year of 1924, more than 4,000 cultures were distributed to workers. The catalogue gives an alphabetical list of these microbes with their sources. For many years the Lister Institute has assisted bacteriologists at home and abroad by maintaining a limited collection of strains. Before the war there was a collection at the Pasteur Institute, Paris, another at Prague and a third in the Museum of Natural History in New York. But these were limited in range. Early in 1920 the Medical Research Council arranged, with the cooperation of the Lister Institute, to expand the collection into its present form, adding, with the assistance of the British Mycological Society, type cultures of fungi. It is now becoming possible for any research worker, health officer, or the scientific adviser to any industry, to obtain authentic living cultures of most of the living strains of microbes to compare with the organism with which he is working. The collection contains thirty living species of the genus *Aspergillus*. There are examples from soy products used in making pickles in China, from the dust of the London tube railways, from the mealy bug of the sugar cane and from many wild animals in the London zoo. Of the tubercle bacillus there are more than twenty strains—from human cases of lupus, bovine types, avian types, one from a kangaroo, and cold-blooded types from alligators, tortoises, frogs and fishes. There is culture of *Bacillus botulinus* obtained from the only outbreak of botulism that has occurred in this country (in Scotland in 1922). There are examples of the organisms of trypanosomiasis and of nagana disease in tropical Africa.

## PARIS

*(From Our Regular Correspondent)*

Nov. 16, 1925.

### Conjugal Neurosyphilis and Its Pathogenesis

M. Sézary, in a recent article, calls attention to conjugal neurosyphilis. In such cases both husband and wife are affected with hidden or unrecognized syphilis and present at the same time or successively signs of a nervous affection either parenchymatous (tabes, general paralysis), arterial (hemiplegia, paraplegia) or meningeal (jacksonian epilepsy, paralysis of the cranial nerves). While such cases are not frequent, they are important. Conjugal neurosyphilis constitutes one of the strongest arguments for belief in the neurotropic strain of spirochete. This theory, supported by some authors, is far from being accepted by all neurologists and syphilologists. The fact is, it is exceedingly rare for syphilis in husband and wife to manifest itself exclusively by nervous lesions; frequently one or even both are affected, at the same time that the nervous affection appears, by a characteristic syphilitic aortitis, leukoplakia or gummatous or papulotuberculous cutaneous lesions.

In further support of the belief in the neurotropic strain of spirochete, it has been noted that the offspring of a parent or parents with neurosyphilis has contracted the disease. Such cases are rare, and in some cases the child of such parents is affected with syphilis of the skin or bones. The existence of a strain exclusively neurotropic is, therefore,

contradicted by the observed facts. Hereditary predisposition seems to be present in certain cases in which neurosyphilis develops in various members of the same family, contaminated by different sources. It has never been proved that the husband and wife affected by neurosyphilis came from families in which such predisposition existed; furthermore, the part played by hereditary or familial predisposition in the etiology of nervous diseases has been exaggerated.

As to environment, frequently the two partners to the marriage have occupations so widely different that the vulnerability of their nervous system cannot be explained in this way. The alleged effect of conjugal alcoholism is not plausible; the supposed favorable action of alcoholism on neurosyphilis has, moreover, been contested by numerous authors. The social factor plays no part; persons affected with neurosyphilis belong to all classes of society. Nor can inadequate treatment explain conjugal neurosyphilis. No doubt inadequate treatment favors its development, but there is no apparent reason why neurosyphilis should be found in syphilitic married couples who have received inadequate treatment rather than aortic syphilis or syphilis of the skin and bones.

According to Sézary, the pathogenesis of conjugal neurosyphilis will be readily understood by taking in account two factors: (1) the relative rarity of conjugal neurosyphilis, and (2) the fact that if one discriminates between neurosyphilis proper (tabes, general paralysis) and arterial and meningeal neurosyphilis, which are only special types of vascular or other forms of syphilis, it will be seen that the cases of conjugal neurosyphilis proper are rare. For instance, Marie and Beaussart were able to collect during a five-year period, in the large Villejuif psychopathic hospital, only twenty-six cases of conjugal neurosyphilis proper. Neurosyphilis, however, has wide incidence. From observations of patients in the Charité Hospital, Sézary concludes that in old cases of syphilis the manifestations are nervous in two out of three cases. Under these circumstances, there is no need to explain neurosyphilis by neurotropism of the spirochete or predisposition of the patient. It is not surprising that syphilis expresses itself in husband and wife by its most frequent manifestation.

### Nontuberculous, Tracheobronchial Adenopathy

Guinon and Levesque, endeavoring to establish more definite criteria for the diagnosis of tuberculous juxtamediastinal lesions, have sought to discover what roentgenologic images represent bronchopulmonary sequelae of acute respiratory diseases. Their results appear in an article in the *Archives de médecine des enfants.* Selecting from patients with tardy respiratory sequelae of infectious diseases (pertussis, measles, acute bronchopneumonia) those who were free from tuberculosis, they found either (1) the absence of all roentgenologic anomalies or (2) quite frequently a roentgenologic image of great diagnostic value. This image is juxtamediastinal but always in the lower half of the thorax, to the right, along the right border of the heart. The image always occupies the space just above the diaphragm, usually extending to it, and lies below the normal bronchovascular shadow. There is never a roentgenologic anomaly along the trachea or at the level of the hilum. It is not a round shadow with clear outlines, but shows lightly shaded bands lengthened obliquely at the base and forming a triangle with the diaphragm as the base, more or less divided, like the jaws of forceps, at the apex of the hilum. Sometimes the external margin of the principal mass sends out horizontal prolongations toward the costal wall. These images show great mobility from coughing or respiration. Finally, the diaphragm is often misshapen; during respiration, it presents the festoon sign described by Maingot. The authors conclude that these images are not indicative of adenopathy and that everything points to their parenchymatous origin.

This, together with the ordinary bronchopulmonary syndrome, leads them to think that the respiratory sequelae of infectious diseases consist of various parenchymatous lesions ranging from chronic bronchopneumonia, probably the cause of the roentgenologic modifications previously cited, to the main syndrome of bronchopneumonia with dilatation of the bronchi. Nontuberculous chronic adenopathy never appears, provided the examination is made immediately after convalescence from the acute stage. It is therefore very easy to distinguish the roentgenologic images described above from tuberculous juxtamediastinal images. The latter are located at the hilum, in the angle which the large vessels of the base form with the heart, or at the borders of the trachea. They have a rounded aspect, with frank outlines which point to adenopathy even when they are located in the lower part of the thorax on either side of the heart; one should not confuse them with the special roentgenographic image described above.

## PRAGUE

*(From Our Regular Correspondent)*

Oct. 21, 1925.

### Public Health and the Budget

The parliament has just approved the state budget of the ministry of health for 1926. Because the Czechoslovak currency has been stabilized for three years, it is possible to compare the budgets for those years. While the budget for 1925 amounted roughly to 126 million Czechoslovak crowns, the total for 1926 is 146 millions. There are no radical changes in the budget for the next year. The law on the restriction of state personnel prescribed a reduction of 10 per cent. in the personnel of all branches of public service, but it has been decided that the health service shall be reduced only 4 per cent. The largest item in the budget, 39 millions, is for state institutions, including hospitals and state laboratories. The second largest item, 31 millions, is for salaries of health officers. The third largest item, 10 millions, is to maintain indigent patients in public hospitals. Eight millions is appropriated for the fight against such diseases as tuberculosis and venereal diseases. Four millions goes to child welfare, 5 millions for the improvement of public water supplies and sewage disposal plants, and 2½ millions for the construction of hospitals. The health service for the autonomous territory of Carpathian Russia has a special chapter with 11½ millions. While the Czechoslovak crown is valued at 34 crowns to one American dollar, this makes an expenditure of about 30 cents per head for public health purposes.

### New School for Social and Public Health Workers

A new school for public health visitors has been opened in Turocz Szt. Marton, Slovakia. The school was organized by the Czechoslovak Red Cross and has been taken over by the county authorities. It is located provisionally in a summer hotel but is to be moved next semester into a new building which is nearly completed. There has long been a need for such a school because Slovakia had no qualified workers in the field of social work and public health. Forty Slovakian girls, all graduates of the domestic science schools, have been accepted for a two years' training. Besides instruction in the theory of social work and public health, they will receive practical training in home visiting. The hospital is not yet big enough to give them the bedside training necessary to qualify them as public health nurses. The practical training will be in the hands of a graduate nurse who has had the international course in public health nursing given under the auspices of the League of Red Cross Societies in England. It is planned to organize in the district in which the school is located a public health demonstration in which the county, the province and the state shall participate and which shall

be in charge of a full-time health officer. The idea is to show the girls how a modern health service should be organized so that they may imitate it when they go out into practical life. It is intended to use the same district for the practical training of health officers. Their theoretical preparation is to be given in the state institute of hygiene in Prague, but they must produce evidence that they have undergone practical training in a demonstration district before they may be admitted to final examination.

### Orthopedic Congress

The first congress of the Czechoslovak Orthopedic Society, successfully organized by Professor V. Chlumsky, was held in Bratislava, September 27 and 28. More than 150 guests participated. In addition to all three medical faculties of the Czechoslovak Republic, the Polish surgeons and the Jugoslavian medical profession were represented, Professor Lesnjowsky coming from Warsaw and Dr. Grospic from Jugoslavia. Professor Chlumsky, who is the chief of the orthopedic clinic at the Bratislava Medical School, was in the chair. He presented a paper on the causes and the modern treatment of incipient scoliosis. Other papers deserving special mention are: the lecture of Professor Tobiasek of Prague on orthopedic gymnastics and their relation to the different systems of physical education; the paper of Dr. Zahradnicek of Brno on the clinical significance of the numerical and morphologic anomalies of the vertebrae, and a lecture of Dr. Burian on plastic operations on the face and extremities. Several resolutions were adopted by the congress. One recommends improvement of the orthopedics branch of medical education by devoting one of the four compulsory semesters in surgery to orthopedics. Another one asks for independent chairs and departments of orthopedics such as have been created in Bratislava with Professor Chlumsky as the chief. This change has brought about a remarkable development of orthopedic service in the Bratislava Medical School. The department should be charged with educating makers of orthopedic appliances who at present, although they have no special education, often advise the public as to the apparatus to be applied and consequently do much harm in many cases. The application of orthopedic procedures should be reserved strictly for specialists, who should be qualified medical practitioners with special postgraduate training in orthopedic clinics.

### Operation for Cerebellar Tumor

Professor Schloffer and Professor Poetzl of the Prague German Medical Faculty have recently reported a unique operation, which has been successfully performed. The diagnosis of tumor in the cerebellum was made on a man, aged 40. Because the condition of the patient grew steadily worse, operation was decided on. The operation disclosed a tumor in the right half of the cerebellum and made necessary the removal of almost the whole of this portion of the cerebellum. Fifteen days after the operation the patient was able to leave his bed, and ultimately he returned to his normal occupation. Although he has been under observation for several months, he is feeling well and continues in his previous occupation. The scientific literature contains one case of a similar operation, which was performed by de Stella, whose patient survived the operation but died eight weeks later. Professor Schloffer believes that the beneficial result of his operation is due to the fact that he succeeded in preserving the nucleus dentatus and the whole system of cerebrifugal connections.

### Retirement of Professor Jaksch Wartenhorst

Professor Rudolph Jaksch Wartenhorst is retiring as chief of clinic for internal medicine of the Prague German Medical Faculty. He was born in 1855, the son of the famous internist, who was also professor of internal medicine in Prague. After his studies under Klebs, Nothnagel and Przibram in 1883 he became lecturer on internal medicine at the German Medical Faculty in Prague, where he has remained ever since. In 1888 he was appointed professor of internal medicine and developed into the foremost figure of the teaching staff of his institution. His publications are concerned chiefly with metabolic diseases as evidenced in the components of the urine. In the early nineties he initiated the campaign against tuberculosis in Bohemia. In 1893 he founded the German Association for the Erection of Tuberculosis Sanatoriums in Bohemia. In 1903 he transformed the association into a society for aid to the tuberculous, enlarging at the same time the whole scope of the antituberculosis campaign by including in its program especially the erection of antituberculosis dispensaries. Since 1922 he has been the head of the German Federation of Antituberculosis Associations in the Czechoslovak Republic. Professor Eppinger, who has been occupying the chair of internal medicine at the Medical Faculty in Vienna, has been appointed as the successor of Professor Jaksch. Professor Eppinger will begin his lectures in Prague in the summer semester of 1926.

### Meeting of Surgicogynecologic Society

The meeting of the Czechoslovak Surgicogynecologic Society was devoted to discussion of the proposal made by its late president, Professor Kukula, shortly before his death. Professor Kukula suffered from angina pectoris, to which he ultimately succumbed. In the last months of his life he paid especial attention to the study of angina pectoris and its treatment. It was shown at his clinic that cervical sympathectomy brings relief in from 60 to 70 per cent. of cases but is often followed by undesired after-effects, such as hemorrhagic pleural effusion, irregularities of deglutition and irritation of the third branch of the trigeminal nerve. All these complications Dr. Jirasek, formerly Dr. Kukula's assistant, attributes to the mechanical irritation of the upper portions of the sympathetic. In order to obviate these complications, Professor Kukula proposed resection of the sympathetic plexus around the aorta. The anatomic possibility of this operation was studied by Dr. C. H. Weigner, professor of surgical anatomy at Prague. He believes that it would be possible to resect the branches of the sympathetic in the anterior mediastinum along the large blood vessels. This operation would have the advantage of avoiding undesirable by-effects. The members of the Surgicogynecologic Society think that the project has been studied so far that it deserves a trial in an actual case with a chance of success.

### Changes in Czech Medical Faculty in Prague

Two important changes have occurred recently in the teaching staff of the Czech Medical Faculty in Prague. The chair of pathologic anatomy, after the late Professor Hlava, was given to Prof. Rudolph Kimla. Professor Kimla is the oldest pupil of Hlava, and has been professor of experimental pathology in Prague. In his opening lecture he described his own scientific development by following the history of modern pathologic anatomy. The macroscopic stage of the science was followed by intensive microscopic research and was intensified by the discoveries of Koch and Pasteur. Coordination of these activities showed that mere morphology could not explain all the problems under discussion and therefore it was necessary to pay attention also to the study of pathology. After the World War, social problems began to influence research in theoretical sciences, and international machinery was created for the coordination of research, such as the Health Committee of the League of Nations. Professor Kimla could follow this development on his favored subject, which is primary infection in tuberculosis. According to him, human knowledge can be enlarged only through cooperative research. Prof. A. Ostrcil has been appointed to the chair of

gynecology, succeeding Prof. V. Rubeska. Professor Ostrcil has been chief of the gynecologic clinic at the Brno Medical School. In his opening lecture, Professor Ostrcil described the importance of the work of his predecessor for the development of operative gynecology and emphasized the fact that the specialty of gynecology must be built on a fundamental and thorough education in general medicine.

## BERLIN

*(From Our Regular Correspondent)*

Nov. 7, 1925.

### Physical Development of School Children in 1924

Prof. Rudolf Martin of Munich (recently deceased) has given the results of his somatometric and somatoscopic researches on 7,065 children—3,573 boys and 3,492 girls—attending the public schools of Munich. Since 1921, the children of the same seventeen schools have been subjected to regular yearly examinations. The number of children examined in the various age-groups (with the exception of the 10½ age-group) is so large that the averages are reliable. Twenty-one body measurements were made on each child, from which further values were computed. Six descriptive characters were noted in each child and any peculiarities were recorded. Martin sought to establish to what extent the influence of the recent war could be observed in the physical development of our youth. The various age-groups were subjected to these damaging influences varying periods of time; nor were the various war and postwar years equally harmful in their effects on child life. The worst years were those of the food blockade and the year 1923, which witnessed the climax of inflated currency. In these years many parents were unable to secure for their children a sufficient quantity of even the most essential foods. A good deal depends, too, on what stage of physical development the children had reached when their bodies were deprived of foodstuffs that constituted the building material for their normal future development. In 1923, in children that were born during the first years of the war and were thus subjected throughout their early childhood to the damaging influences of poor food, a distinct decline in almost all body measurements, as compared with the physical development recorded in 1921, was noted. Not only were measurements taken, but the general state of nutrition was inspected, the same method being followed that the Quakers used in the medical examinations made in connection with the feeding of German children. An average nutrition was the state most commonly found in all age-groups and both sexes, and the proportion fluctuated between 39.5 and 54.3 per cent. Thirteen per cent. of the children were found to be "badly" or "very badly" nourished. More of the boys were found in the group nourished below the average and more of the girls in the group nourished above the average. Measurements of the girls from 6 to 10 years old showed more subcutaneous fat and more rotundity of the female figure.

The boys were, on the average, taller than the girls. The half-year gains in height corresponded to normal rates of increase. Boys weighed more until the tenth year, when a gradual reversal took place. The chest girth (taken after exhalation) was much less in the girls than in the boys, even with increasing age. Chest girth increased more slowly than height; the relative chest girth dropped from 50.9 in boys aged 6 to 49 in boys aged 9½, after which it began slowly to increase. The corresponding decrease in the girls was from 49.8 to 47.7. Taken absolutely and also in relation to height, the trunk length increased in the two sexes quite uniformly. Not until the seventh year did the growth become more rapid. Until the tenth year was reached, trunk length in the girls, taken absolutely and also in comparison with the height, was less than that of the boys. The relative trunk length dropped continuously from 55 to 54 in the boys, and from 55.6 to 53.7 in the girls. With the length of the legs it was just the opposite. The leg length increased much more rapidly than the trunk length. In boys the increase in leg length between the ages of 6 and 10½ was 11.2 cm.; in girls the increase was 12.5 cm., as compared with an increase in trunk length, during the corresponding period, of only 7.1 and 7.8 cm., respectively. It was evident, therefore, that, in the girls as well, the absolute and the relative values of leg length were greater than in the boys. On the other hand, up to the tenth year, the breadth across the shoulders and the width of the pelvis were almost equal in the two sexes. The typically feminine breadth of trunk does not develop, therefore, until at a later age.

The past year has brought an improvement in the growth of school children of the ages 6 to 10, especially in height and weight. In the children aged 8½, there was an increase of 3.2 cm. in the boys and 2.8 cm. in the girls. In the younger age-groups, though not in the older, the values recorded in 1921 have again been reached. The absolute and relative changes of chest girth in the various age-groups were slight.

### Body Build and Physiognomy

Before the Berliner Physiognomische Studiengesellschaft, Dr. Löwenstein, neurologist of Hanover, spoke recently on body build and physiognomy. With the aid of numerous diagrams and portraits, and taking the researches of Professor Kretschmer of Tübingen as a basis, he explained the connection between the body build and the symptoms of mental disturbance, decay and degeneration. In the study of abnormal mental manifestations, psychiatrists no longer confine their observations to the brain and skull formation. On the contrary, in connection with endosecretory processes, the form and structure of the whole body are studied (of which the face may possibly be taken as merely a symptomatic portion). Kretschmer distinguished three different types of body build: (1) the leptosarks, or the slender, usually having a small head, a slender neck and a sunken chest; (2) the athletes, with broad chest and marked muscular development, and (3) the pycnics, or thick-set, with compact body build, short legs, protruding paunch, head thrown forward, a rounded back and usually a heavy beard. The leptosarks and the athletes, if they become affected with mental disease, present the same symptoms, because they have fundamentally the same temperament. Fully developed mental disease in these first two groups affects the intellectual centers; for thinking and feeling are disturbed and their relations to the external world are much affected. Opposed to these two groups (termed schizoids) is the third group, the pycnics, in whom, as a rule, only periodic depression occurs, which does not affect the intellectual centers or relations with the external world. One can observe a temperamental character even in subjects who are mentally sound. For example, Gottfried Keller, Fritz Reuter, H. Seidel, Luther, Blücher, and, among the artists, Thoma and Hals, presented a typically pycnic body build, and their published works give evidence of the corresponding mental temperament. While not naturally given to systematic, logical thinking, there is a vein of humor pervading their works; they have a preference for long-drawn-out epical style and give evidence of an altruistic character. On the other hand, the schizoids (the slender and the athletic types) seek retirement; their acts are usually characterized by pronounced egoism, by reason of which their own personality becomes the center of every interest. They are the great systematic thinkers. We may mention Kant, Newton, Spinoza, Rousseau, Calvin, Schiller, Körner, Feuerbach, Michelangelo and, finally, Strindberg, whose mental affection was of a marked schizophrenic type.

## Marriages

ALBERT C. VAN REENEN, Covington, Va., to Miss Gladys Camillia Vermillera of Richmond, October 28.

WILLIAM EDWARD SMITH to Miss Mary Elizabeth Berkeley Moring, both of Farmville, Va., October 22.

BOLLING JONES ATKINSON to Miss Eugenia Clementine Vincent, both of Emporia, Va., October 31.

VICTOR MACKAY DALY to Mrs. Anna Raymond, both of Pontiac, Ill., at St. Paul, September 16.

ROBERT BURWELL GROVES, Lowell, N. C., to Miss Moody Schools of Richmond, Va., October 10.

ROBERT MATTHEWS, Norfolk, Va., to Miss Mary Willis McLemore of Suffolk, October 24.

RICHARD E. SHOPE, Iowa City, to Miss Helen Ellis of Linville, at Des Moines, recently.

BEVERLEY F. ECKLES to Miss Annie Gill Dixon, both of Richmond, Va., October 31.

ERNEST L. COFFIN, St. Louis, to Miss J. Rebecca Jarvis of Webster Groves, October 3.

DONALD E. BELL, Newcastle, Ind., to Miss Margaret Benoy of Indianapolis, recently.

## Deaths

**John Lewis Hildreth,** Winchester, Mass.; Dartmouth Medical School, Hanover, 1868; member of the Massachusetts Medical Society; emeritus professor of clinical medicine, and formerly dean, Tufts College Medical School, Boston; at one time member of the Cambridge (Mass.) School Board, and on the staff of the Cambridge Hospital; member of the Massachusetts State Board of Lunacy and Charity, 1895-1898; aged 87; died, November 27.

**Thomas Roy Martin** ✦ Duluth, Minn.; University of Minnesota Medical School, Minneapolis, 1907; formerly demonstrator of pathology and bacteriology at his alma mater; past president of the St. Louis County Medical Society; member of the Minnesota Pathological Society, the American College of Physcians, and the Radiological Society of North America; aged 43; died, November 15.

**Thomas Grant Alcorn,** Thompsonville, Conn.; College of Physicians and Surgeons, Boston, 1898; member of the Connecticut State Medical Society; past president of the Hartford County Medical Society; formerly state senator; aged 56; died suddenly, November 27, of cerebral hemorrhage.

**Romulus Armfield,** Marshville, N. C.; Medical College of Virginia, Richmond, 1881; member of the Medical Society of the State of North Carolina; past president of the Union Medical Society; aged 73; died, November 23, at the Ellen Fitzgerald Hospital, Monroe, of chronic nephritis.

**George Albert Fuson,** Everett, Wash.; Barnes Medical College, St. Louis, 1899; member of the Washington State Medical Association; formerly health officer of Cascade County (Mont.), and president of the Montana Public Health Association; aged 54; died in November.

**William Allison Secrist,** Alpena, Mich.; Starling Medical College, Columbus, 1881; member of the Michigan State Medical Society; past president of the Alpena County Medical Society; aged 72; died, November 18, of cerebral hemorrhage.

**George Theophilus Kemp,** Baltimore; Long Island College Hospital, Brooklyn, 1891; formerly professor of physiology, College of Physicians and Surgeons, Chicago; aged 64; died, November 24, at the Church Home and Infirmary, of pneumonia.

**L. Cooper Harman,** Philipsburg, Pa.; Jefferson Medical College of Philadelphia, 1882; member of the Medical Society of the State of Pennsylvania; aged 64; died, September 13, of lung abscess and pneumonia, following an operation for gallstones.

**George Eugene Harbert** ✦ Beverly, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 50; died, November 12, at the University of Pennsylvania Hospital, Philadelphia, of injuries received in an automobile accident.

**Charles M. Moates,** Leavenworth, Kan.; Meharry Medical College, Nashville, Tenn., 1888; member of the Kansas Medical Society; formerly city physician; aged 63; died, November 17, at St. John's Hospital, of pneumonia.

**Richard Joseph Dwyer** ✦ Hartford, Conn.; Jefferson Medical College of Philadelphia, 1908; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 48; died, October 22, of pneumonia.

**Christian Martin Berntsen,** Chicago; Northwestern University Medical School, Chicago, 1908; member of the Illinois State Medical Society; aged 41; died, November 28, of bronchopneumonia, following influenza.

**Herbert Houston Sawyer,** Boston; Boston University School of Medicine, 1893; member of the Massachusetts Medical Society, and the New England Dermatological Society; aged 55; died, November 13.

**Ovid V. Burnett,** Shelton Laurel, N. C.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1904; aged 50; was shot and killed, November 16.

**Jedediah Kilbourne Hayward,** New York; Bellevue Hospital Medical College, New York, 1893; aged 54; died, November 15, at the Manhattan State Hospital, of acute myocarditis.

**Frank Henry Zitz,** New York; Medical Department of Columbia College, New York, 1888; member of the Medical Society of the State of New York; aged 61; died, November 26.

**Frances Alice Harper** ✦ Pittsburgh, Kan.; Kansas Medical College, Topeka, 1904; aged 54; died, September 15, at the Mount Carmel Hospital, of cerebral hemorrhage.

**Andrew Johnson Baird,** Gatesville, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1879; aged 70; died, November 5, of cardiovascular disease.

**Jesse David Moore,** New Castle, Pa.; Medical Department of the University of the City of New York, 1885; aged 66; died, November 14, of cerebral hemorrhage.

**James M. Boyd,** Annapolis, Ind.; University of Pennsylvania School of Medicine, Philadelphia, 1877; aged 78; died, November 16, of heart disease.

**James Wales Henry,** Jackson, Ohio; Miami Medical College, Cincinnati, 1884; formerly a druggist; aged 85; died, November 22, at Columbus.

**Daniel W. Carlisle,** Princeton, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1865; aged 87; died, October 30, following a long illness.

**Samuel Cecil Oglesby,** Girdletree, Md.; University of Maryland School of Medicine, 1892; aged 55; died, November 15, of bronchial asthma.

**William De Caux Tilney,** Crawfordsville, Ind.; Philadelphia University of Medicine and Surgery, Philadelphia, 1878; aged 84; died, October 11.

**Thomas Wisdom Repass,** Wytheville, Va.; Medical College of Virginia, Richmond, 1895; aged 58; died, November 8, of cerebral hemorrhage.

**Granville H. Albright,** Barbourville, Ky.; University of Louisville School of Medicine, 1892; also a druggist; aged 69; died, November 13.

**Edward Rushmore,** Plainfield, N. J.; Jefferson Medical College of Philadelphia, 1872; aged 80; died, November 24, of pneumonia.

**Frank E. Morley** ✦ Viroqua, Wis.; Rush Medical College, Chicago, 1893; aged 63; died, November 21, of cerebral hemorrhage.

**Walter Henry Kelley,** Boston; Medical School of Harvard University, Boston, 1902; aged 54; died, November 16, of pneumonia.

**Jefferson Pugh,** Greensburg, Ind.; Indiana Medical College, Indianapolis, 1874; died, September 26, of chronic nephritis.

**Charles Thomas McClane,** Roswell, N. M.; Eclectic Medical Institute, Cincinnati, 1878; aged 80; died, October 20.

**Alphonsus J. Forget,** Los Angeles; Catholic University, Louvain, Belgium, 1894; aged 66; died, November 13.

**Garrett Pigman,** Liberty, Ind.; Bellevue Hospital Medical College, New York, 1883; aged 67; died, October 17.

**John Newton Ryan,** Coyle, Okla. (licensed, Oklahoma, under the Act of 1908); aged 73; died, November 8.

**Anthony Doyle,** New Canton, Ill.; American Medical College, St. Louis, 1887; aged 93; died, November 5.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

## INCITAMIN NOT ACCEPTABLE FOR N. N. R.

### Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Incitamin was presented for consideration by Lehn & Fink, Inc., New York, with the statement that it is manufactured by A. H. Riise, Copenhagen, Denmark. In the information furnished the Council it was stated that Incitamin is a "standardized preparation of equine saliva, freed of coagulable substances," that "each cubic centimeter contains 12 units of Ptyalin" (the unit is defined and a method for testing given), that it is preserved with 1 per cent. of chinosol. It was stated to be indicated in the treatment of indolent ulcers.

"According to the theory of the originators, Incitamin owes its therapeutic value to the stimulation of the activity of the blood plasma."

Entirely different statements as to the composition are made on the trade package and the advertising which was submitted. Here it is stated:

"Incitamin is a mixture containing saliva (equine), serum (also equine), and pancreatic extract. . . . It is preserved by the addition of one-half of one per cent. of phenol."

The Council called the attention of Lehn & Fink, Inc., to the contradictions in the statement of composition and pointed out that no pharmacologic data of any kind was given indicating that such a preparation is useful and that no clinical evidence had been presented for its clinical usefulness. The firm was informed that Incitamin could not be considered on the data as to composition and action which had been submitted.

After the Council had postponed the consideration of Incitamin for more than ten months, Lehn & Fink, Inc., submitted further information. This consisted of a report that 6 c.c. of Incitamin per kilogram was not fatal to guinea-pigs when injected subcutaneously, and photostatic copies of a number of reports from physicians who had used the preparation. No further information was furnished in regard to the composition.

The reports from physicians are, for the most part, based on single cases of various forms of ulcers. A considerable number of the reports are to the effect that the result was "good" or "very good" or "favorable." Other reports state "improvement" or "promising"; others state that the results were "indefinite," "rather slow," "doubtful," "cannot see any marked change," "not satisfactory," etc. In some of the cases in which improvement was noted, other forms of treatment were also used. In other cases, Incitamin was used after various kinds—in some cases rather drastic kinds—of treatment had been employed and the suspicion arises that the favorable course of the case following the use of Incitamin was due to the cessation of harmful treatment. There is nothing in the case reports to suggest that better results were obtained by the use of Incitamin than can be obtained by the use of ordinary methods, or that equally good results could not be obtained with 0.5 per cent. phenol solution.

The Council found Incitamin unacceptable for New and Nonofficial Remedies because the statements of composition are contradictory; no data are given as to the amount of equine serum and pancreatic extract present; no data of any kind are given that the ingredients (whatever they are) have any action (except perhaps the phenol or chinosol); and so far as the evidence goes, it is an absurd and unscientific mixture.

When the preceding statement was sent to Lehn & Fink., Inc., the firm replied that Incitamin formerly contained "saliva, equine serum and pancreatic extract," but that the formula had been changed to a "standardized preparation of equine saliva." The firm also requested opportunity to submit further evidence. The Council, therefore, postponed publication of its report for more than six months. During this period no further evidence for the usefulness of Incitamin was received: therefore, the Council authorized publication of this report.

## MORE MISBRANDED NOSTRUMS

### Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

**Gary's Vegetable Ointment.**—The Sloan and Spencer Medicine Co., Birmingham, Ala., are alleged to have shipped in February, May, July and October, 1923, respectively, a quantity of "Dr. Gray's (Gary's) Vegetable Ointment" from Alabama to Mississippi. The Bureau of Chemistry reported that analysis showed the product to consist of two liquids that would not mix, the lighter being mainly kerosene and the heavier alcohol; both contained turpentine oil, camphor, and menthol. The product was declared misbranded, first, because it was not an ointment, and, second, because ridiculously false and fraudulent therapeutic claims were made for it, the stuff being recommended for practically all the ailments known to the human system. In April, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 13080; issued May, 1925.*]

The files of the Bureau of Investigation show that "Dr. Gary's Vegetable Ointment" used to be manufactured by "Dr. P. Gary" of Chattanooga, Tenn. Gary, so far as the records show, never was a physician. In 1919, the city of Cleveland, Ohio, prohibited the sale of Gary's Vegetable Ointment, manufactured at that time by the Gary Medicine Company of Chattanooga. The Chattanooga *Times* for Nov. 22, 1919, reported that two of the three partners in the Dr. Gary's Medicine Company of that city had filed suit against "Dr." Presley Gary, praying the appointment of a receiver for the company and an injunction restraining Gary from disposing of any of the property owned by the partnership. Further, the paper reported: "According to the allegations of the bill, Dr. Gary has lately taken to drink and has appropriated much of the alcohol used in the manufacture of his 'Vegetable Ointment' to satisfy his own appetite"; also, according to the same bill, Gary had often promised either to stop drinking or withdraw from the partnership, but had done neither. It was charged, too, that Gary had sold thirty-five hundred bottles of this fraudulent nostrum that should have netted the partnership about $1,750, of which the two complaining partners got only $190.

**Sayman's Wonder Herbs.**—The T. M. Sayman Products Co., St. Louis, Mo., shipped in January, 1924, to the state of Kansas a quantity of "Dr. Sayman's Wonder Herbs," which the government declared misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed it to consist essentially of a mixture of baking soda, powdered ginger, gentian, rhubarb, licorice, cascara sagrada, buchu, senna, mandrake and buckthorn. The stuff was declared misbranded, first, because it was said to be composed of "all herbs"; as baking soda is not an herb this was a falsehood. It was further declared misbranded because the claim that it would regulate the liver, kidneys, cleanse the blood, aid digestion, cure nervousness, syphilis, female complaints and various other conditions as false and fraudulent. In January, 1925, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 13098; issued May, 1925.*]

**Chappelear's Bronchini.**—William M. Chappelear & Sons Co., Zanesville, Ohio, are alleged to have shipped in various consignments in November, 1923, and May, June and October, 1924, respectively, a quantity of "Chappelear's Bronchini," which was declared misbranded. When analyzed in the

Bureau of Chemistry it was reported to consist of ammonium chlorid, extracts of plant drugs, flavoring material, including anise and sassafras oils, sugar, alcohol, and water. The stuff was sold as an alleged cure for bronchitis, asthma, croup, influenza, and "throat and lung troubles." The claims were declared false and fraudulent. Furthermore, while the label declared the presence of 40 per cent. alcohol, there was only about 30 per cent. present. In April, 1925, the William M. Chappelear & Sons Co., having admitted the allegations, decrees of condemnation and forfeiture were entered and the court ordered that the product be released to the concern on payment of the cost and execution of a bond of $1,500 conditioned in part that the preparation be relabeled under the supervision of the Department of Agriculture.—[*Notice of Judgment No. 13365; issued August, 1925.*]

**S-K Remedy.**—The S-K Remedy Co., Oakland, Oregon, are alleged to have shipped to California in September, 1920, a quantity of "S-K Remedy" which was declared misbranded. The Bureau of Chemistry reported that analysis showed the product to be composed essentially of vegetable drugs including aloes and a small quantity of a mydriatic alkaloid, alcohol and water. Some of the claims made for this product were:

"This new and wonderful Remedy known as S-K Sifkure is the first and only purely vegetable compound ever produced that has stood the test as a remedy for Syphilis. S-K is not an experiment, it has passed through that stage. Fifteen years of constant use on hundreds and hundreds of cases has as yet to produce a single case of syphilis that failed to yield to the S-K treatment."

These vicious claims were naturally declared false and fraudulent, and in January, 1925, judgment of condemnation and forfeiture was entered and the court ordered the product to be destroyed.—[*Notice of Judgment No. 13239; issued June, 1925.*]

# Correspondence

## "ACHLORHYDRIA PRECEDING PERNICIOUS ANEMIA"

*To the Editor:*—I have read (The Journal, November 21, p. 1638) the report of a case of achlorhydria preceding pernicious anemia in which the achlorhydria had existed for fourteen years previous to the development of the anemia. I can report one case of pernicious anemia in which the achlorhydria was present twenty-five years before the appearance of symptoms of pernicious anemia. In this case the pernicious anemia developed and progressed, with clinical signs and symptoms of an organic lesion of the spinal cord, namely, so-called subacute combined sclerosis of the spinal cord, which is present in a large percentage of cases of pernicious anemia. This patient developed pernicious anemia with all its usual signs and symptoms, and the achlorhydria was present twenty-five years before the appearance of the anemia, as shown by analysis of the gastric contents.

In another case, a woman had achlorhydria twenty years previous to the appearance of symptoms of pernicious anemia. I have had under observation a large number of cases in which we have observed achlorhydria eight and ten years previous to the appearance of anemia, and still a larger number in which we have been able to observe achlorhydria for a period of four or five years.

In a paper, entitled "A Clinical Study of Two Hundred and Sixty-Four Cases of Pernicious Anemia with Special Reference to the Involvement of the Central Nervous System" (*Battle Creek Sanit. & Hosp. Bull.*, April, 1923), I called particular attention to the fact that a condition of achlorhydria or an absence of hydrochloric acid and pepsin in the contents of the gastric juice existed for a period of many years previous to the appearance of any signs of anemia.

The evidence gathered from a study of this large group of cases seems conclusive that all cases of pernicious anemia are preceded by a rather lengthy period of achlorhydria, and in some of these cases, as in the case of a man mentioned above, this period may be at least twenty-five years before any signs of anemia appear. Another important fact in connection with the finding of achlorhydria is that most of these persons have badly infected teeth, pyorrhea alveolaris, and also many of them have infected tonsils. The evidence is quite strong that the achlorhydria and the pernicious anemia that follows or is associated with the achlorhydria are both the result of an infection from the mouth, causing an atrophy of the peptic glands of the stomach and later causing a destruction of the blood cells and pathologic changes in the spinal cord and other parts of the body.

W. H. Riley, M.D., Battle Creek, Mich.

## "SPIROCHETAL PULMONARY GANGRENE TREATED WITH ARSPHENAMINS"

*To the Editor:*—Through an error, the report of my discussion (The Journal, November 7, p. 1459) on the article on spirochetal pulmonary gangrene by myself and Dr. Berger was not corrected for publication. Because of the mistakes in that report, I will appreciate it if you publish the following:

In these cases, there is usually a pyorrhea, dental caries or some active lesion in the mouth associated with Vincent organisms. In one case at necropsy a molar tooth was found carious, the cavities filled with foul smelling, greenish material containing many spirochetes. These organisms are best stained by the Fontana silver impregnation method. The predominating organisms in early pulmonary gangrene are of the Vincent type.

Before ulceration occurs, there is usually a peribronchial and peribronchiolar consolidation. Then the lung has a moth-eaten appearance. It is mottled with gray-green, foul smelling areas containing Vincent organisms. Later there are small and large cavities. Unlike those of tuberculosis, there are no ridges or bridges present. The Vincent organisms spare nothing, and shreds only of necrotic tissue are left hanging to the walls of the cavities, which are practically hollow spherical. Still later, the lung will often show healed, healing and active grangrenous lesions. An interesting complication in one case was a brain abscess. The abscess had the brown-greenish-grayish appearance of the lung lesion and with it there were associated a number of spirochetes.

Benjamin S. Kline, M.D., Cleveland.

## "MEDICAL HISTORICAL PERSPECTIVE"

*To the Editor:*—I suspect that more than one teacher of medical students has been somewhat disconcerted after reading the editorial comment on medical historical perspective in The Journal (November 21, p. 1645). The item details the replies of thirty junior and senior students to an inquiry regarding "the names of five persons who, in their opinion, might be considered as having made the greatest contributions to medical science." The editorial writer, after listing the students' answers, comments: "How many had a clear conception of what constitute contributions to the progress of medical sciences?"

Let us admit frankly at the outset that "the mark of the cultured man in any field is a knowledge of its background and its growth, and of its relation to the rest of the cosmic scheme that we call civilization." In a recently published historical outline, M. G. Seelig (Medicine, Baltimore, Williams and Wilkins Company, 1925) remarked that the opinion of medical educators is unanimous regarding both the practical and the cultural value of the study of the history of medicine. However, the author adds: "Many important considerations militate against the establishment of such a

discipline within the formal medical curriculum. Other influences check the initiative of the medical undergraduate who has at least a fleeting independent impulse to acquaint himself with the medical past; for one thing, he shies at the various authoritative books devoted to the history of medicine, frightened by their bulk as contrasted with the small amount of free time at his disposal."

Nor is this the sole limitation to the medical students' proficiency in the history of science. Driven at a frightful pace through the intricate mazes of almost innumerable facts, old and new, he scarcely finds time to catch his breath long enough to marshal his thoughts into orderly sequence. Add to this the multiplicity of details of technic that must likewise be mastered, and the probable place of the history of medicine in the ensemble of a senior, not to say junior, student's studies can be imagined.

After all, enthusiasm for the historical aspects of science grows with maturity, with opportunity for reflection, with a ready familiarity that develops perspective. Are we expecting too much erudition and expertness at a time when the elements of medicine are first being acquired? Culture involves an attitude of mind and a mode of personal reaction far more than it implies the ability to distinguish succinctly the masters of medicine.

LAFAYETTE B. MENDEL, New Haven, Conn.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

## HEALTHFUL VENTILATION

*To the Editor:*—I am glad to read your editorial "Air Currents in Ventilation." I note that you consider "badness" of air due to chemical change or poisonous organic respiratory products, both as negligible and obsolete factors. From your article, I am unable to tell whether you lay stress on a supply of fresh air from outside for your air currents or whether agitation of a given volume of air would fulfil the conditions indefinitely. If the latter, ventilation would be reduced to a liberal supply of electric fans. If the former, do modern experiments require anything like the amount of fresh air that we formerly supposed necessary? Past views of this subject have required a certain number of cubic feet of new air per person per hour in schoolhouses.

OLIVER H. HOWE, M.D., Cohasset, Mass.

ANSWER.—In all ventilation problems a distinction should be made between places like private houses, where a few people gather, and public places, such as theaters. In the former, air leakage is so great that it is practically impossible to detect the decrease of oxygen or increase of carbon dioxid due to the respiration of the occupants. The humidity never gets high, and air may be recirculated without danger. Of course, the taking of cold air from outside into the home in cold weather is throwing away coal. Fans would help house comfort, particularly if so arranged as to force out the hot layer next the ceiling and mix it with the cooler air near the floor.

In places where many people gather it is sometimes possible to detect a difference in air gases as compared with outside air, but even in such cases the differences are small and not of physiologic importance. However, in the presence of many people the temperature and humidity of the air become high, and either new air should be freely admitted or else the air of the room should be reconditioned and recirculated. Fans are a help in a crowded room, but may not be sufficient to give comfort. Comfort depends on the ability of the body to lose heat as fast as it is produced. We cannot do that when the surrounding air is too warm and humid.

The usual figures of fresh air requirement are possibly too high. "Keep down the temperature" should be the motto in every school room. Air motion should be sought by fans or other devices, and enough outside air admitted so that comfort is maintained.

A popular article on some of these problems will appear in the January number of *Hygeia* under the title, "How to Put Humidity in Your Home." The spray column humidifier and cooler there described would solve the problem of good air in most school rooms.

It should perhaps be added that air washing may actually diminish the quantity of water in air. If air of high humidity and high temperature is brought in contact with a fine spray of cold water, the air comes out cool and saturated with water vapor. But the total moisture in the air at the lower temperature may be less than that present before it entered the washer. Such air, as it is warmed up in breathing, takes on more water, keeps down body temperature and contributes to comfort.

## NEPHRITIN

*To the Editor:*—May I not acknowledge through THE JOURNAL the receipt from Reed and Carnrick of their booklet entitled "The Reserve Wealth of the Kidneys"? It has a nice cover and is well gotten up. It has nice pictures. In it are recorded some known truths about the kidneys and much that may be questioned. Some trite sayings are quoted, such as "The kidney expects every tube to do its duty," and "Don't cross bridges until you come to them."

Then the doctors are joshed: "Some patients first make sure that they have given all advertised remedies a fair trial, then adopt the advice of a neighbor who was 'cured of the same complaint' by a chiropractor, finally appealing to a regular practitioner as a last resort."

Further on, the pamphlet speaks about "setting up a vicious circle," and "when the kidneys go on strike the employees of the Internal Secretion Department walk out in a body," and "should the executive import a slave-driver to lash the loyal tubes on to and beyond their endurance?"

Again: "What glandular therapy does for myxedema, Nephritin will do for Nephritis." Right after this statement are a lot of claims, which I pass by with a question: "Nephritin uses its potency to control and *direct* the natural function of the kidneys." "We can, however, by the use of Nephritin, make every healthy cell do its full duty."

May I ask that you look over the inclosed "booklet" and let your readers have a little light on the subject? Known truth in the matter would be applicable to a purpose.

VICTOR S. MESSINGER, M.D., Easton, Pa.

ANSWER.—The present claims for Nephritin (Reed and Carnrick) appear to be substantially the same as those advanced when the Council declared this preparation, along with other products of this company, inadmissible to New and Nonofficial Remedies ("Reed and Carnrick's Methods," THE JOURNAL, Oct. 5, 1907, p. 1198). A summary of the Council's findings on Nephritin was later published in answer to a query (THE JOURNAL, April 21, 1923, p. 1167). The Council rejected Nephritin because of the grossly exaggerated, unwarranted and misleading claims made for it by the manufacturers, inviting them at any time to present more and fuller evidence to substantiate the claims. This they have never done, though they continue to circularize the profession with booklets such as the one here mentioned.

## DEVICES TO AID HEARING

*To the Editor:*—I have a patient who has suffered some fifteen years with defective hearing following a double mastoid infection. He requested me to write you for advice as to the best form of apparatus to buy to help his hearing. He has used a Morley and one or two others without much help. He wanted to know about the apparatus the Dictograph people put out or any other that you may be familiar with and can recommend.

J. S. ALFORD, M.D., Crested Butte, Colo.

ANSWER.—Small apparatus for insertion in the external auditory canal do not as a rule improve the hearing. Many persons do not wish to carry with them a hearing tube, which, although it is of great assistance, is rather cumbersome and unsightly. The aids to hearing that have given the greatest satisfaction are those which are activated by the electric current. A number of these are on the market, but most of them have the objection that it is necessary to carry a battery on one's person and also a receiver and ear attachment. Most of the electrical apparatus have a good many adventitious noises and are sometimes confusing. In cases of nerve deafness, these appliances are not of much service; but in the one mentioned, in which there has been mastoid involvement and it is the conduction apparatus that is mostly affected, these appliances usually give considerable assistance. During the last few years, besides batteries, several appliances have been evolved that utilize vacuum tube oscillators (the same sort of tubes that are used in radio outfits) for amplifying the sound. There is one called the Vactuphone which is said to give great satisfaction. The Western Electric Company of New York also is perfecting an apparatus of which the ear piece is small or practically invisible, and in which the audion bulb is also used for intensifying the sound. The last two mentioned devices are rather expensive, and it is better to test them out thoroughly on the patient before purchasing. In most of the appliances all the tones are

amplified alike, whereas the most desirable form of apparatus which could be had is that in which those particular tones to which the patient is hard of hearing are intensified to the greatest degree.

### SMALLPOX VACCINATION

*To the Editor:*—We are having a few smallpox cases here, and I should like to ask some questions that I find unmentioned in my textbooks. Please reply in THE JOURNAL. 1. After an attack of smallpox (less than six months before), would a vaccination "take"? This patient had an eruptive disease, either chickenpox or variola, but about five or six months later was successfully vaccinated. He had never before been vaccinated. 2. Does variola in a pregnant mother confer any immunity on the fetus? Does it confer any immunity at birth only? 3. If glycerinated vaccine "dies," when exposed to a temperature much above 40 to 45 F., how is it that "ivory points" of past years, before the glycerin lymph was introduced (which were never kept in the icebox as the glycerin lymph is directed to be done), were able to inoculate patients? 4. In the case of two brothers, both healthy, two tubes of vaccine from the same lot and just off the ice were used; one got a take the first time, yet the other failed to and has twice since. What is the cause? Is the second brother immune? Please omit my name. M.D., Missouri.

ANSWER.—1. It is not reasonable to expect that a vaccination should take six months after an attack of smallpox, and it is quite certain that the disease the patient had was not smallpox.

2. If a woman suffers from smallpox during pregnancy, it is possible that some immunity may be transferred to the fetus by the passage of antibodies through the placenta. It is also possible that there may occur antibodies in the mother's milk and that the nursling may become passively immunized from this milk. In either case the immunity thus conferred, being passive, will be of comparatively short duration. The possibility should not be overlooked that the fetus may survive an intra-uterine smallpox, which would leave a much more permanent and active immunity.

3. Generally speaking, dried biologic products such as vaccine maintain their potency longer than in liquids.

4. It would be a mistake to assume that the brother in whom the vaccination failed is immune to smallpox. He should be vaccinated again.

### DIHYDROXYACETONE

*To the Editor:*—A newspaper clipping states that dioxyacetone, a new diabetes remedy to reduce sugar, may be taken by mouth instead of by injection. One of my patients asks me to find out about it.

J. A. H., New York.

ANSWER.—Dioxyacetone (better called dihydroxyacetone) was reported on in the *Canadian Medical Association Journal*, April and May, 1925, by I. M. Rabinowitch.

According to Rabinowitch, the acidosis of diabetes was overcome by the administration of dihydroxyacetone.

Following is an abstract from Dr. Rabinowitch's first paper:

Dihydroxyacetone is a ketotriose, unstable in alkaline mediums, readily oxidized, and nontoxic in dosage of 50 to 100 gm. by the mouth. Its administration is followed by lowering of blood sugar, and it appears to have some influence on the excretion of glucose. In one case of diabetes it was found to replace small amounts of insulin, at least temporarily.

### SMELLS OF THE HUMAN BODY

*To the Editor:*—Could you furnish me with some references to the subject of smells of the human body? Please omit my name.

M.D., Philadelphia.

ANSWER.—Following are references to published articles on this subject:


Thomayer, J.: Diagnostic Importance of Smelling, *Cas. lek. cesk.* **62**: 669 (June 23) 1923.

Niedermeyer, A.: Diagnosis by Smelling, *Deutsch. med. Wchnschr.* **49**: 387 (March 23) 1923.

Sutton, R. L.: Bromidrosiphobia, THE JOURNAL, May 3, 1919, p. 1267.

Mandl, F.: Importance of Odors in Clinical Diagnosis, *Deutsch. med. Wchnschr.* **48**: 1280 (Sept. 22) 1922.

De Blasio, A.: Odors of the Human Body, *Riforma med.* **36**: 652 (July 17) 1920.

Clark, L. P.: Odor of the Peculiars, *Med. & Surg.* **1**: 1091 (Dec.) 1917.


### ADMINISTRATION OF DIPHTHERIA ANTITOXIN

*To the Editor:*—Where is the best location to give 1 c.c. doses of diphtheria toxin antitoxin to school children 6 to 7 years of age? Should these doses be given subcutaneously or intramuscularly?

F. L. SALISBURY, M.D., Cleveland.

ANSWER:—It is customary to give the injections subcutaneously in the outer side of the arm. It probably makes little difference whether the injection is made subcutaneously or intramuscularly.

# *Medical Education, Registration and Hospital Service*

## COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

COLORADO: Denver, Jan. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Jan. 12. Sec., Dr. Edgar P. Copeland, Apt. 104, Stoneleigh Court, Washington, D. C.

HAWAII: Honolulu, Jan. 11. Sec., Dr. G. C. Milnor, 401 So. Beretania St., Honolulu.

ILLINOIS: Chicago, Jan. 19-21. Supt. of Reg., Mr. V. C. Michels, Springfield, Ill.

INDIANA: Indianapolis, Jan. 12. Sec., Dr. W. T. Gott, 421 State House, Indianapolis.

MINNESOTA: Minneapolis, Jan. 5-7. Sec., Dr. Thomas S. McDavitt, 734 Lowry Bldg., St. Paul.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 25-28. Chief, Mr. Herbert J. Hamilton, Department of Education, Albany.

NORTH DAKOTA: Grand Forks, Jan. 5. Sec., Dr. George M. Williamson, Grand Forks.

OREGON: Portland, Jan. 5-7. Sec., Dr. N. C. Coe, 1208 Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 26-30. Act. Sec., Mr. C. D. Koch, Harrisburg.

RHODE ISLAND: Providence, Jan. 7. Sec., Dr. Byron U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 19. Dir. Med. Licensure, Dr. H. R. Kenaston, Bonesteel, S. D.

UTAH: Salt Lake City, Jan. 5. Director of Reg., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WASHINGTON: Olympia, Jan. 12. Sec., Mr. William Melville, 15 Insurance Bldg., Olympia.

WEST VIRGINIA: Charleston, Jan. 19. Sec., Dr. W. T. Henshaw, State Health Department, Charleston.

WISCONSIN: Madison, Jan. 12-14. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

WISCONSIN: Milwaukee, *Basic Sciences*, Dec. 18-19. Sec., M. F. Guyer, Madison.

### Michigan June Examination

Dr. Guy L. Connor, secretary of the Michigan Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 10-11, 1925. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. One hundred and seventy-five candidates were examined, all of whom passed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Northwestern University Medical School | (1925) 84, 85, | (1925)* | 84 |
| Rush Medical College | | (1925)* | 86 |
| The General Medical College | | (1924) | 83 |
| University of Illinois | | (1925) | 85 |
| Boston University School of Medicine | | (1924) | 86 |
| Harvard University | | (1922) 85, | (1924) 85 |
| Tufts College Medical School | | (1923) 85, | (1924) 83, 85 |
| University of Michigan Medical School | | (1924) 85, | (1925) 80, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84

| | | |
|---|---|---|
| St. Louis University School of Medicine | (1925) | 80, 85.9 |
| Queen's University Faculty of Medicine | (1924) | 84.3 |
| McGill University Faculty of Medicine | (1924) | 86 |
| University of Toronto Faculty of Medicine | (1914) (1920) 84.4, (1921) 85.8, (1923) 83, 86.8, (1924) 83, 83, 83.7, 84, 84.1 | 84, |
| University of Göttingen, Germany | (1919)† | 79 |
| University of Naples, Italy | (1911)† | 76 |
| University of Jurjev, Russia | (1918)† | 77 |

| College | FAILED | Year Grad. | Per Cent. |
|---|---|---|---|
| University of Palermo, Italy | (1904)† | 43, (1920)† | 61 |

* These candidates have finished their medical course, and will receive their M.D. degrees on completion of a year's internship in a hospital.
† Graduation not directly verified by the American Medical Association.

# Book Notices

STUDIES OF MENTAL DEFECTS AND HANDICAPS. By J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology, Miami University. Paper. Price, 75 cents. Pp. 177. Oxford, Ohio: Miami University, 1925.

In this bulletin are collected a series of studies on mental deficiency that appeared previously in various periodicals. They represent some of the results of seven years' work of the Psycho-Educational Clinic of the St. Louis public school system, while the author was its director. The studies include not only the results of psychometric tests of children reported by the teachers as deficient, but also the outcome of parallel investigations into heredity, physical health, etiologic factors, scaphoid scapulas, behavior characteristics such as truancy and delinquency, and certain speech and language disorders. It is somewhat unfortunate that the tabulations are given throughout in percentage form without correlations. The material entering into these tables is too extensive for detailed discussion here. The author frankly admits the inadequacy of many of his data, even though he is often dogmatic. He is especially emphatic in regard to the interpretation of age levels as indicators of feeblemindedness. In discussing etiology and the relations with pathologic conditions, he has relied on the reports of others, including medical inspectors of the schools. It is not easy, as the author recognizes, to evaluate many of these data; especially is this true for one who is not fully trained in medicine. This is well shown in the chapter on scaphoid scapulas; the criticisms by the author on the faulty findings of the physicians in such a simple and objective investigation will naturally arouse doubts as to the adequacy of other findings that are used as a basis for conclusions. For example, "infantile paralysis" is accepted as the adequate "sole cause" of mental deficiency in two cases. This use of the term suggests a lay rather than a well informed medical source, but it is accepted without comment. Though the statement is made that medical examinations were performed by school medical inspectors, there is nothing in the text to indicate how they were made or to differentiate what was reported by physicians from that by friends, nurses or others.

The discussion of the value of psychometric tests in diagnosing feeblemindedness, by which is meant social and economic dependence or incompetence due to congenital or early acquired intellectual deficiency, is a good illustration of the pragmatic, social attitude adopted by the author. He points out that many persons testing even so low as 9 years in mental age are quite capable of self support and full social responsibility. This opinion is supported by figures from the army examinations and by the findings from the admittedly inadequate follow-up studies that have been possible since the work with school children in St. Louis was undertaken. He makes no allowance for the fact that in the army the tests were applied to adults. He expresses further the opinion that "the degree of intelligence deficiency necessary to constitute feeblemindedness must be so serious that the individual on attaining his maturity will not exceed an intelligence level of 9 years." The full meaning of this assertion becomes clear from the statement in another chapter that "we cannot adequately diagnose a child's educational or social capacity or prognose his industrial capability by intelligence tests alone." The life history and behavior characteristics must be taken into account; unfortunately, such traits are insusceptible of exact measurement. The conclucions reached, therefore, are in accord with those of the psychiatrist, who regards the mental age as only one factor in a complex picture.

The Missouri law dealing with backward, feebleminded and otherwise handicapped children by establishing special and ungraded classes in the schools is discussed in detail. This will prove of value to all interested in the development of state plans for the care of mental defectives. The results reported from the operation of the law also suggest more rational and optimistic views of this problem than have been usually prevalent. Throughout, the author compares his findings with those of others and quotes figures extensively from the literature. Divergences of result are stressed as indications for real scientific study and for the abandonment of bias for fact. The style is self-assertive, and the writer often appears to be unnecessarily contentious. The general trend of the discussions, however, is healthy and pragmatic, and the tabulations will be found valuable for reference and comparison.

RATS AND HOW TO DESTROY THEM. Dealing with Rats in a House, Shop, Warehouse, Outbuilding, Yard, Stable, Cow-House, Fowl-house, Pig-sty, Garden, Greenhouse, or Vinery; by a River, Stream or Ornamental Water; on a Ship, Shooting Estate, or Farm; and in Sewers. By Mark Hovell, F.R.C.S., with introduction by S. L. Bensusan. Cloth. Price, $5. Pp. 465, with 51 illustrations. New York: William Wood & Co., 1924.

Mr. Hovell does not underestimate the acumen of rats; and he surely does not overestimate the intelligence of the men who catch them. His work is reminiscent of Izaac Walton, Dan Beard and the Pied Piper of Hamelin rolled into one. For forty years or more, the author has been taking notes, making experiments, inventing traps and covers for traps, devising signal systems, and analyzing poisons, mixing his own and testing their worth. Traps, runs and shelters for the traps have been made with his own hands, tried on his own property, and found worthy of public acceptance and use. "We must destroy these worst of all vermin," says the introduction, "for if we fail to do so, they will destroy us. Not only will they add very many million pounds a year to our national losses, but they will thrive so upon our negligence that Nature, the divinity that shapes our rough-hewn ends, will become alarmed at their numbers and send the plague among them. This plague is communicable to man in bubonic or pneumonic form, as most people know."

MODERN OPERATIVE SURGERY. Edited by H. W. Carson, F.R.C.S., Senior Surgeon, Prince of Wales's General Hospital. In two volumes. Cloth. Price, $20 per set. Pp. 1568, with 741 illustrations. New York: William Wood & Co., 1925.

In the preface to this work, the editor says: "This is an attempt to present to the profession an authoritative survey of the whole range of modern surgical operations." And: "My aim has been to exclude operations which have lost their usefulness, and among new operations to include those only which have *proved* their value." These two statements virtually take the wind out of the sails of any one attempting to review the work; first, because it would mean to assail the wisdom and attainments of the editor as one not competent to decide what to exclude and what not; and, secondly, because the contributors have been selected with great care; they are men of acknowledged ability, and their word has been accepted as law, although no more binding than that of other equally well equipped men. Only controversial argument would result from any attempt to make a critical review—especially as the reviewer, in turn, presents only his own views. Among the contributors and their subjects are: Blomfield, anesthetics; Gauvain, surgical tuberculosis; Elmslie, general orthopedics; Handley, malignant disease and breast; Turner, liver and other structures; Walton, intestinal stasis; Verrall, joints; Hey-Groves fractures; Platt, nerves; Drummond, rectum; Rawling, skull and brain; Choyce, the tongue; Gillies, plastic surgery; Thomson-Walker, kidney and ureter, bladder, prostate and urethra. Only English surgeons

have made contributions, and each of them has been exceedingly conservative in presenting his views. Some subjects apparently receive scant notice; some are omitted, but, remembering what the editor says in his preface, these sins of omission and commission can always be charged to the fact that whatever is not mentioned either has been discarded by the best surgeons or has not yet been accepted as really worth while. No attempt is made to present any subject in essay style, but merely in the form of present day actual knowledge. Speculation is not indulged in anywhere. Each topic is discussed systematically with reference to preoperative preparation and treatment, choice of anesthetic, asepsis and antisepsis, and general principles of technic and after-treatment. Results from many sources are presented, but, in keeping with the underlying idea of the work, no attempt is made to make any extensive references to literature. The writers apparently limit themselves to the presentation of what they regard as known and accepted facts, and quote only such references as bear on these facts. With that style one can have no quarrel, especially as this work is not heralded as a textbook. It is a record of the personal views and convictions of well known English surgeons, and as such will no doubt prove of great interest to all surgeons. The text is well written; it is clear and—with emphasis—concise. The illustrations are all original, a distinct novelty in books, although not without a precedent, an American surgeon who recently finished an extensive work on operative surgery having used only original drawings. The illustrations really illustrate, artistic merit often being sacrificed to clarity of depiction of an operation. On the whole, the work possesses much merit and can be read with great profit and pleasure.

PATHOLOGISCHE PHYSIOLOGIE DES CHIRURGEN. (Experimentelle Chirurgie.) Ein Lehrbuch für Studierende und Aerzte. Von Prof. Dr. Franz Rost, Leitender Arzt der chirurgischen Abteilung des städtischen Krankenhauses Mannheim. Third edition. Paper. Price, 27 marks. Pp. 626. Leipsic: F. C. W. Vogel, 1925.

Perhaps the greatest single advance in the surgery of the last decade is represented in the domination of surgical thought and procedure by the physiologist. Such fields of surgery as the thyroid, spleen, liver, gall tracts and stomach are noteworthy examples of this advance. This volume, dealing with pathologic physiology, includes in its scope every region of the body accessible to the surgeon. Its aim is to correlate the physiology of malfunction with symptomatology, and to establish a logical basis for corrective surgery; as the author puts it, "to provide a link between the student and the physician in the interpretation of diseases of the human body." The modern surgeon must be more than a mere mechanic. He must know and recognize living pathologic change. He must know, for instance, the significance of the exudate in peritonitis, or the effect of the various operative procedures advocated for ulcer on the motor mechanism of the stomach. He must know and recognize the various signs of malfunction as they contraindicate surgery. The development of the functional test in surgical diseases may be cited as example. The volume includes chapters on the digestive tract, kidneys, thyroid, chest, central and peripheral nervous systems, and the extremities. In this edition are valuable contributions on lymphatics, arthritis, arteriovenous aneurysm, and bone and joint tuberculosis. The work may be said to stand foremost among monographs on this phase of surgery.

THE ANIMAL AS A CONVERTER OF MATTER AND ENERGY. A Study of the Rôle of Live Stock in Food Production. By Henry Prentiss Armsby, Director of the Institute of Animal Nutrition, Pennsylvania State College, and C. Robert Moulton, Professor of Agricultural Chemistry, University of Missouri. Cloth. Price, $3. Pp. 236. New York: The Chemical Catalog Company, Inc., 1925.

The new monograph of the American Chemical Society series coming from the late authority Dr. H. P. Armsby and from an authority of wider range, Dr. C. Robert Moulton, will no doubt be welcomed by those associated with various phases of the production of meat products. The main title is no doubt rather misleading, in that the book hardly attempts to present fundamental facts and problems but treats the subject more from the standpoint of technical information, as more accurately suggested by the subtitle. The book is divided into two parts. The first part, on the chemical processes of conversion, covers in elementary fashion the composition of feeding stuffs, the composition of the finished products resulting from stock raising and a brief discussion of digestion, absorption and metabolism. This part of the book is valuable from the standpoint of the tabular statements of composition there compiled, but does not give the most accurate account of such topics as maintenance of neutrality. The second part is on efficiency of conversion and gives in some detail the methods of investigation used and the results obtained. The material presented should prove of considerable value to scientific workers associated with stock raising and milk production. The book is well indexed and contains many valuable bibliographic footnote references.

SYNOPSIS OF MIDWIFERY AND GYNAECOLOGY. By Aleck W. Bourne, B.A., M.B., B.Ch., Senior Obstetric Surgeon, Queen Charlotte's Hospital, London. Third edition. Cloth. Price, $4.50. Pp. 434, with 171 illustrations. New York: William Wood & Co., 1925.

This is an excellent synopsis of obstetrics and gynecology. The first part, on obstetrics, is written in outline form. It is fairly complete and authoritative, giving the English obstetrician's point of view. The value of this section has been greatly enhanced over previous editions by the use of many well made illustrations. The second section is an outline of gynecology, very thorough, even including the relatively recent pathologic entity called endometrioma. The pathology of the various conditions is well described. In general, the book is well adapted for reviewing the subject quickly.

## *Miscellany*

### COLONIZATION OF ARRESTED CASES OF PULMONARY TUBERCULOSIS ON FOREST RESERVE LANDS

Our nation, exclusive of Alaska and our overseas dependencies, embraces 3,000,000 square miles of land surface. Twenty per cent. of this would mean 600,000 square miles of forest area. Proper management and working of our forest lands would increase fourfold the present output of timber, a supply sufficient for the needs of our land for all time. The deep ravines, securely damned up, could better distribute and control the water output, giving us the use of it when most needed in the summer time. The power so generated would be almost incalculable. It is sufficient to state that at present not 1 per cent. of our flood water is utilized; the rest of it is lost, and all too often works ruin during its mad rush to the sea. Were all of our available water supply put to use we could multiply ten times over the power at present generated in the United States, and we would be using an endless chain of power, and not a perishable one as is the case today. The coal will some day all be gone; the water power we shall have forever. Furthermore, as an added advantage, at least 1 ton of food fish per acre could be produced every year from these artificial lakes, a sum total that would be an immense addition to our food supply. Turning again to the land surface, every thousand acres of forest land could be made to yield each year 200 deer as an addition to our present meat supply. If the entire forest area was so utilized, more than 70,000,000 deer could be provided annually. Elk or other game might be substituted, but in any case it would be an addition to our present meat total, for it would not be taking up much of the area now used for pasture purposes. The income that can be derived from the very waste heaps of our present lumbering methods would yearly run far into the millions. Today these heaps of slashings and scrap stuff are even more than waste—they are a positive source of danger to the standing timber. Left lying dry on the ground, the spark of the carelessly thrown match all too often ignites them and a blackened hillside tells the tale of loss from fire. From them could be obtained immense quantities of alcohol, oxalic

acid, acetic acid and creosote. From the waste heaps of the pine lumber camps in the South, many millions of dollars' worth of turpentine could be produced annually. Our tannic acid output could be nearly doubled from the chestnut lumbering refuse, and our present pulp-wood supply could be multiplied several times over from the other lumber waste. At present the United States government and the various state governments own 227,117 square miles of forest reserve land. Let us begin at once really to work these holdings so as to get all out of them we properly can, and in almost no time they will be not only self-supporting but revenue producers as well. The present force, however, at work on them is but a very small fraction of the quota required to do the work completely. Here we could find places for every arrested case of tuberculosis in the United States. All over these forest holdings should be established little colonies and settlements where we could place our tuberculous patients strong enough for work, and here they might begin anew the battle of life. No longer dependent, they would be once more men among men, again adding their quota to the productive forces of the nation. More than this, they would not have to feel that in thus finding work they were taking work from others. Far from it; they would be adding to the actual working force of the country and could stand independent and foursquare with the world. A good many of our men would be able also to do patrol work, looking out for forest fires from watch towers and other points; others could be engaged in surveying and research work, and as they gained strength could help in the making and looking after roads and trails and fire lines and thinning and harvesting timber. Also, they could find employment in power plants and as game and fish wardens, guides for camping parties, work in insect control, collecting tree seedlings, and building and repairing telephone lines. Willow plantation work and the making of willow-ware articles could, much of it, be done by women as well as men. Then there is a big field in the making of wood novelties along with the manufacture of baskets and various bark articles. This plan for the combined conservation of man and timber may seem visionary and far away today, but it is a very feasible and very practicable one, and some day it surely will be done.—Rothrock, A. M.: *U. S. Veterans' Bureau M. Bull.* **1**:32 (Dec.) 1925.

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## CONFERENCES ON HEROIC REMEDIES

Most of the organized governments of the world were represented at the Second International Conference on the Unification of Formulas of Heroic Remedies held in Brussels, Belgium, September 21-29. The United States government and the Revision Committee of the U. S. Pharmacopeia were represented by A. G. DuMez, who reports, in part:

The session was devoted to the adoption of rules governing the work of the conference and to the appointment of committees to consider and report on Topics 1, 2, 4, 5, 6 and 9 of the program, an outline of which follows:

Topic 1. Revision of the decisions of the first conference.
Topic 2. Unification of the formulas of other heroic remedies.
Topic 3. Unification of arsenic and bismuth compounds.
Topic 4. Unification of chemical methods of assay of certain medicaments.
Topic 5. Unification of biologic methods of assay.
Topic 6. Unification of maximum doses.
Topic 7. Examination of the proposition to adopt a characteristic container for remedies intended for external use.
Topic 8. Regulation of international commerce in narcotics.
Topic 9. Examination of the project to create a permanent international secretariat of pharmacopeias.

It was unanimously agreed that Topic 8 should be stricken from the program, as the subject was already being dealt with by a special committee of the League of Nations.

Subsequent plenary sessions were held, September 22, 23, 25, 26 and 29. At these sessions, there were considered, in addition to Topics 3, 7 and 9 and the reports of the committees, several special propositions, namely: (1) A proposition to adopt a chemical method of standardization of the arsenicals, submitted by Dr. De Myttenacre of Belgium. (2) A proposition to adopt extracts of unit strength to be used in the preparation of other galenicals, submitted by the Swiss delegation. (3) A proposition to study the methods of dealkalizing glass containers intended for eye lotions and hypodermic solutions, submitted by the Swiss delegation. (4) A proposition to compile alphabetically in a small volume all the decisions on drugs and medicaments made by the conference, submitted by the Swiss delegation.

# *Medicolegal*

### Use and Weight of Examining Physician's Report

*(Hart v. Industrial Accident Commission et al. (Calif.), 235 Pac. R. 748)*

The District Court of Appeal of California, Third District, in affirming an award of the commission which denied compensation to an employee who met with an accident, says that an examining physician in the case wrote a letter describing the accident, what his examination revealed, and that his conclusion was that the patient had a right indirect advanced inguinal hernia, which was an old hernia as it was too large to have developed in five days, and tenderness was lacking. It was contended that a rehearing should be granted on account of the commission having received and acted on hearsay testimony; namely, the report of the examining physician. The existence of legislative sanction for the admission of such testimony was recognized, but the constitutionality thereof was questioned. The court does not agree with the contention, nor deem the law unconstitutional.

As to whether reports of examining physicians are reliable and whether credence may be given thereto and action based thereon are not matters for this court to determine. The legislature has amended the law so as to admit the receipt of such testimony by the commission, and the weight and credibility to be given thereto are for the commission, and not for the court.

A considerable portion of the petitioner's brief was given to a consideration of the causes of hernia, its origin, its symptoms and results, based on quotations from de Quervain on Clinical Diagnosis and Buckman's Operative Surgery. These writers differed somewhat from the conclusions reached by the examining physician, but this court had no means of determining whether these writers were more accurate in their statements, or better informed, or more likely to give correct information, than the examining physician. The argument of counsel reduced to a simple statement was the placing of hearsay testimony against hearsay testimony, the writing found in a book against the writing constituting the report of an examining physician. The court thinks the commission was justified in acting on the report of the examining physician, rather than on theories or suppositions or statements found in books, because the writer of the report undoubtedly knew at the time of making it that he was subject to the call of the commission and could be specifically and thoroughly interrogated as to any matters or statements contained in it. In any event, these were matters for the commission, and were within the exclusive jurisdiction of the commission.

### Chiropractor Not a "Legally Qualified Physician"

*(Isaacson v. Wisconsin Casualty Association (Wis.), 203 N. W. R. 918)*

The Supreme Court of Wisconsin says that during a portion of the time for which the plaintiff sought to recover a sick benefit under an accident insurance policy he was attended by a chiropractor. The policy required, as a condition of the payment of the sick benefit, that the insured should be attended by "a legally qualified physician," and the defendant argued that, since the Wisconsin statute provides that "reputable practitioners of chiropractic may practice their profession in this state, if they do not hold themselves out as registered or licensed, and conspicuously display in the places where they practice a sign containing in large and legible type: 'Not registered or licensed in Wisconsin,'" they are not to be classed as regularly qualified physicians.

It is a well known fact that chiropractors specialize in certain classes of diseases; that ordinarily they do not administer medicine or treat certain classes of diseases very common to humanity. It is not here intended to determine whether or not specialists who are regularly licensed come or do not come within the terms "legally qualified physician," as used in the policy. But it seems quite clear that, in using the term "legally qualified physician," the insured as well as the insurer meant a physician who was qualified and licensed

to practice, and that the term did not include a specialist in body manipulations only, such as a chiropractor. Many forms of sickness attack persons that chiropractors do not pretend to treat at all. It was undoubtedly the idea of the insurer, in choosing the term "legally qualified physician," to include only persons who could aid and treat all classes of ailments to which the insured might be subject, and that where, as here, there was a case of rheumatism and pleurisy, the services of a regularly qualified physician, one who might and would prescribe and administer medicine as well as perhaps employ body manipulations, was intended.

As stated in briefs by both counsel, the term "physician" is one of very wide significance and colloquially speaking includes the term "surgeon" and many specialists within the field of medicine. It is the broadest term our language contains applicable to one who practices medicine, including both medicine and surgery in its original meaning. This court therefore reaches the conclusion that the trial court erred in holding that a chiropractor was a "legally qualified physician" within the meaning of the policy, and the judgment rendered will be modified by deducting the amount allowed the plaintiff for disability during the time that he was not treated by a "legally qualified physician."

### Employer Liable for Roentgen-Ray Burn in Examination

*(Lincoln Park Coal & Brick Co. v. Industrial Commission et al. (Ill.), 148 N. E. R. 79)*

The Supreme Court of Illinois says that an employee was injured in the course of his employment in February, 1921. He was voluntarily paid $533.07 compensation by his employer. He returned to work, but insisted that he had only partly recovered, and that he was entitled to further compensation, which was not agreed to by his employer, and he filed an application for the adjustment of his claim. The employer demanded that the employee be examined by a physician selected by it. On March 10, 1922, he submitted to an examination in the course of which roentgenograms were made by the physician. On March 12 an agreement was made for a settlement on payment of $200, which was approved by the industrial commission. About three days later the employee discovered that he had been burned on the abdomen by the roentgen-ray machine. The evidence disclosed that the burn caused a rather serious condition. On April 24 he filed a petition for review under the workmen's compensation act of Illinois. The industrial commission made an award, ordering the employer to pay him $12 a week for 230.57 weeks, commencing April 24, 1922, and thereafter a pension for life of $23.33 a month, and $382.75 on account of medical and hospital services. The circuit court set aside the award, but the supreme court reverses the judgment of the circuit court and affirms the award of the industrial commission, after deducting $128.40 from the award for medical and hospital services, which it was admitted should have been $254.35, instead of $382.75.

The employee contended that, as he was required by the employer to undergo the examination by the physician who was its agent in making the examination, the injury inflicted by the examination was the proximate result of the original injury. The employer, on the other hand, contended that the proceeding authorized by paragraph (h) of Section 19 of the compensation act, under which the employee filed his petition for further compensation, was for compensation for a recurrence or increase of disability from the original injury, and did not authorize an award of compensation for injury from any intervening cause; that the burn, although resulting from the examination which the law authorized the employer to require the employee to submit to, was in no sense a recurrence or increase of the disability for which compensation was authorized and in no way was connected with or related to the injury for which compensation was claimed.

The question was a novel one, and counsel for the employer stated that diligent search had failed to disclose any case which had decided the exact question. They contended, however, that the weight of authority is that the employer is not liable, under the workmen's compensation act, for injury resulting from the malpractice of a physician, and that, while that was a different question from the one here involved, there was some analogy between the two questions. But this court believes that it was never contemplated that the statute should authorize the employer to compel an examination by a physician selected by the employer to determine whether the employee is suffering any incapacity from an injury for which the employer is admittedly liable, and if the physician making the examination, through negligence or lack of skill, inflicts an injury which causes disability, the employer should not be liable under the statute. As the injury for which the employee was seeking compensation in this case would not have occurred except for the examination required to be made by the employer, this court is of the opinion that it was so related to, and connected with, the injury as to authorize an award of compensation. In certain cases this and other courts have held that where there was an injury which lowered and weakened the vitality of the employee, and an independent disease was contracted which caused death, it would be attributed to the injury and not to the disease. If those decisions are sound—and this court certainly believes they are—the construction was warranted that the employer was liable to pay compensation in this case.

### Damages Allowed for Colds

*(St. Louis-San Francisco Ry. Co. v. McHaffey et al (Ark.), 271 S. W. R. 452)*

The Supreme Court of Arkansas says that a train on which the plaintiffs were passengers was, by a collision in front of it, delayed from 7 p. m. until 3 or 4 o'clock the following morning, and, the engine being detached to assist in removing the débris caused by the collision, the coach in which the plaintiffs were became very cold, the temperature falling to 16 or 18 degrees below zero. On account of the exposure during the night, the plaintiffs all contracted severe colds. Mrs. McHaffey was indisposed for two or three weeks; an elder daughter was confined to her bed, and barely escaped pneumonia, while two children soon recovered. None of the family suffered any permanent injury on account of the exposure, and, aside from the elder daughter, none of them suffered intensely. At the conclusion of the testimony in all the cases, the defendant railway company admitted liability and asked that the jury be instructed as to the measure of damages only. The elder daughter recovered a judgment for $1,000 damages; Mrs. McHaffey, one for $800; and each of the two children, one for $100. The company appealed, contending that the judgments were excessive, and the supreme court thinks that, under all the circumstances, they were; wherefore it holds that a remittitur must be entered reducing each judgment one half; otherwise the judgments would be reversed and the cause remanded for a new trial.

## Society Proceedings

### COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.

American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis.

American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.

American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.

Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary.

Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.

Sioux Valley Medical Association, Sioux City, Iowa, Jan. 19-20. Dr. R. F. Bellaire, Trimble Block, Sioux City, Secretary.

Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

### American Heart Journal, St. Louis

**1**: 1-128 (Oct.) 1925

*Sudden Death Due to Exacerbation of Latent Syphilitic Myocarditis. A. S. Warthin, Ann Arbor, Mich.—p. 1.
*Prognosis in Subacute Bacterial Endocarditis. E. Libman, New York.—p. 25.
*Selection of Patients with Angina Pectoris for Sympathectomy. S. A. Levine and F. C. Newton, Boston.—p. 41.
*Economic Phases of Cardiac Disease. J. G. Carr, Chicago.—p. 62.
*Status of Heart in Myxedema. F. A. Willius and Haines, Rochester, Minn.—p. 67.
*Postural Hypotension; Three Cases. S. Bradbury and C. Eggleston, New York.—p. 73.
Classification of Cardiac Diagnosis. P. D. White, Boston and M. M. Myers, Des Moines, Iowa.—p. 87.
*Circulation of Heart Valves. W. J. Kerr and S. R. Mettier, San Francisco.—p. 96.
Official Method for Lessening Heart Disease. J. D. McLean, Philadelphia.—p. 107.
New Electrode for Clinical and Experimental Electrocardiography. G. R. Hermann, New Orleans, and F. N. Wilson, Ann Arbor, Mich.—p. 111.

**Death Due to Latent Syphilitic Myocarditis.**—The eight cases reported by Warthin show that sudden death may occur in latent syphilis as the result of an acute exacerbation of previously mild, latent processes in the heart and aorta. The pathologic character of the active lesions differs from that of the chronic lesions in the more marked edema and the greater polymorphonuclear cell content of the infiltrations. In this respect these acute lesions resemble the perivascular and vascular infiltrations of active syphilis of the umbilical cord in which the cells are predominantly polymorphonuclears and the number of spirochetes enormous. They correspond also to the "critical reaction" described by Brown and Pearce in experimental animal syphilis in which there is a diffuse edema and polymorphonuclear infiltration in the rapidly developing syphilitic lesions followed by a rapid resolution. Similar lesions occur in the earliest stages of the syphilitic process, and in lesions of malignant type before ulceration occurs.

**Prognosis in Subacute Bacterial Endocarditis.**—Libman reports on a study of over 800 cases of subacute bacterial endocarditis, extending over a period of twenty-five years. He has found that there is a small number of spontaneous, complete recoveries. There is a surprisingly large number of cases that come under observation with the sequelae of a former attack of the disease, either just before or directly after the infectious stage has terminated, or, more commonly, without any clinical recognition of the attack. Mild cases of short or long duration occur. The disease may exist in recurrent form. In the course of healing, the lesions of subacute bacterial endocarditis play a rôle in the development of chronic valvular disease.

**Sympathectomy in Angina Pectoris.**—A detailed report is made by Levine and Newton concerning seven patients who were selected for sympathectomy. They are all alive from three months to two years following operation. Three were rendered absolutely free from anginal attacks immediately and have remained so. Three continued to have typical anginal attacks after the operation but were nevertheless considerably improved, in that it required a greater effort to bring the attacks on. One was made neither better nor worse. Of these latter four, three have since become practically free from attacks as a result of medical care. An eighth patient died on the day of the operation. It had been decided after careful study that this case was a distinctly unfavorable one to be treated surgically, but because the patient was growing worse and life was becoming unbearable despite a ten weeks' course of medical care, including antisyphilitic treatment, the operation was performed although the operators were fully aware of its dangers. In general it is felt that the operative measures for angina pectoris if carried out on properly selected patients are a distinct addition to therapy.

**Economic Phases of Heart Disease.**—Carr states that about one half of the patients with chronic heart disease with decompensation are of an age at which the earning capacity should be at its maximum and family responsibilities are likely to be most pressing. These persons are affected with a disease which causes partial disability for years and total disability extending, on the average, over a year and a half. In a single dispensary, one third of the families represented were dependent on charity for their sustenance. Figures have been presented from two institutions which show that the economic loss, private and public, covering only a fraction of the patients with heart disease in one of our large cities, must be estimated in hundreds of thousands of dollars annually.

**Heart in Myxedema.**—In 162 cases of high grade myxedema studied by Willius and Haines, no case of heart failure and no case of organic cardiovascular disease was found that could be justly attributed to the myxedema. There were numerous electrocardiographic abnormalities which disappeared under thyroid medication. The data presented do not justify the establishment of a cardiac syndrome characteristic of myxedema.

**Postural Hypotension.**—The one feature of outstanding interest and importance common to the three patients whose histories are given by Bradbury and Eggleston is the extraordinary dependence of the systolic and diastolic blood pressures on the influence of gravity, as exerted through alterations in the positions of the body from the horizontal. The rise of blood pressures in the head down position, and their fall in the foot down or the erect position, occurs almost immediately. The reactions are those which would be expected if the whole peripheral vascular bed were always wide open, inelastic and capable of accommodating the major proportion of the entire blood volume of the body. This is the only definite conclusion to which investigations have led the authors. The cause or causes of this remarkable absence of normal vasomotor control seems to be purely speculative. Efforts to cure these patients, or to control their disorders, have been unavailing. These efforts have included the administration of thyroxin, epinephrin, dried suprarenal substance, mixed glands, strychnin and digitalis, and the enforced consumption of sugar and of water. Paralysis of the sympathetic vasoconstrictor endings seems to be the only adequate explanation of the blood pressure reactions observed in these three cases. It accounts for the absence of vasoconstriction following the injection of epinephrin. And it explains the total absence of the normal vasomotor control by which blood pressure is maintained at a nearly constant level in the face of changes in the position of the body in normal persons.

**Circulation of Heart Valves.**—Further confirmation of the embolic conception of endocarditis is presented by Kerr and Mettier. They point out that further evidence is needed to prove the identity of rheumatic and subacute bacterial endocarditis, but recent investigations are more than suggestive.

### Archives of Dermatology and Syphilology, Chicago

**12**: 613-766 (Nov.) 1925

*Etiology of Granuloma Inguinale. L. H. Cornwall and S. M. Peck, New York.—p. 613.
So-Called Colloid Degeneration of Skin. T. Jager, Wichita, Kan.—p. 629.
*Sporotrichosis in Man. J. F. Burgess, Montreal.—p. 642.
*XLIV. Pellagra; Two Cases. W. H. Mook and R. S. Weiss, St. Louis.—p. 649.
Miliary Lichen Planus; Case. E. R. Maloney, New York.—p. 657.
*Curative Effect of Bismuth Compounds in Experimental Rabbit Syphilis. G. W. Raiziss and M. Severac, Philadelphia.—p. 661.
Blood Wassermann Reaction in Experimental Rabbit Syphilis. G. E. Wakerlin and P. H. Carroll, Madison, Wis.—p. 670.
*Hypercholesterolemia. I. Normal Blood Cholesterol Figures for Man and for Lower Animals. F. D. Weidman and J. W. Sunderman, Philadelphia.—p. 679.
*Tubercle Bacillus as Etiologic Factor in Lupus Erythematosus. A. B. Cannon and G. G. Ornstein, New York.—p. 691.
*Flumerin in Ophthalmologic Complications of Syphilis. J. F. Hogan and J. C. Robertson, Baltimore.—p. 700.

*Clinical and Serologic Value of Colloidal Benzoin Reaction. E. D. Osborne, Buffalo.—p. 706.
Clinical Study of Kahn Precipitation Test and Kolmer Complement-Fixation Test. R. L. Kelly, Philadelphia.—p. 720.

**Micro-Organism of Granuloma Inguinale.**—In three cases of granuloma inguinale studied by Cornwall and Peck, organisms that they believed to be identical were isolated. Lesions resembling clinically and pathologically those observed in humans were reproduced in rabbits by intracutaneous inoculation. An organism apparently identical with the one cultured from human lesions was obtained in cultures from rabbit lesions. Lesions were produced by reinoculation from rabbit to rabbit, and an organism was recovered from the second rabbit that seemed to be identical with that isolated from man. The organism isolated undergoes a characteristic morphologic change in young cultures on Sabouraud's medium. This morphologic change disappears in old cultures, and is not reproduced in subcultures.

**Sporotrichosis in Montreal.**—A case of sporotrichosis occurring in a patient in Montreal is reported by Burgess. Apparently this case represents a somewhat unusual type of the disease, and probably is best described as a single sporotrichotic gumma. The causative fungus is *Sporotrichum beurmanni*. Of interest was the slow response to potassium iodid, a drug that usually results in a relatively quick involution of these lesions. A six months' course of treatment with large doses of potassium iodid was necessary before complete recovery resulted.

**Protein Diet in Pellagra.**—Mook and Weiss report two cases of pellagra in which a pure protein diet was given. In one case complete recovery occurred on this diet but in the other it was necessary to add sufficient fat and vitamin together with digestive ferments to satisfy the caloric requirements. A point of interest in this case was the fact that the disease was self-induced. The patient, aged 16, decided to reduce her weight. The regular diet in her family was not well balanced, and the patient, by omitting one meal daily and using a preponderance of carbohydrate and fat, succeeded in reducing her weight but produced a self-induced pellagra.

**Curative Effect of Bismuth Compounds in Syphilis.**—On the basis of prolonged observations and the method of popliteal node transfer, Raiziss and Severac found that bismuth compounds are powerful enough to cause complete eradication of infection in experimental rabbit syphilis. However, because the low toxicity of arsphenamin derivatives permits the intravenous administration of massive doses, they remain the basic remedies in the treatment of syphilis, bismuth compounds taking the next place.

**Normal Blood Cholesterol Curve.**—A list is submitted by Weidman and Sunderman indicating the normal range of "whole blood" cholesterol in various animal species, and showing in order which species have the highest values. From this it appears that there is no relation between the dietary habits of animals and blood cholesterol content.

**Tubercle Bacillus as Cause of Lupus Erythematosus.**—Tuberculosis, both macroscopic and microscopic, was produced by Cannon and Ornstein in guinea-pigs inoculated with biopsy material from five of twenty-three cases of lupus erythematosus. This fact, while not conclusive proof, would point to the tubercle bacillus as the etiologic factor in this disease. The hypersensitiveness to tuberculin, general, local and focal, is suggestive of the tuberculous nature of this disease.

**Flumerin in Syphilis of Eye.**—Hogan and Robertson discovered accidentally that flumerin is of value therapeutically, the initial dosage in all cases being 3 mg. per kilogram of body weight. The dose was increased according to the amount of salivation and the urinary findings. In most of the cases in which more than 0.2 gm. of the drug was given, there was a gingivitis. This was not severe, however, and usually disappeared in from forty-eight to seventy-two hours. In a few instances, following large doses, the patient complained of tenesmus, and in two or three instances, there was diarrhea, but only in one instance was this of a bloody character. The treatment should be started with 0.15 gm. and raised in doses of 0.05 gm. until a point of tolerance has been reached. One man, weighing 112 pounds (50.8 kg.), was given as high as 0.8 gm. without showing any urinary changes, diarrhea or tenesmus, and only a slight gingivitis. Another advantage of increasing the dose of this drug over the other preparations of mercury is that the symptoms of hydrargyrism become apparent within a few hours, and one does not have to anticipate cumulative action causing salivation, hematuria and gastro-intestinal distress.

**Value of Colloidal Benzoin Reaction.**—A not inconsiderable experience with this test has convinced Osborne that it is superior to the colloidal gold test in its ease of performance, uniformity of result, reliability and amount of information furnished. It should have a wide field of usefulness in differentiating general paresis and incipient general paresis from the other forms of neurosyphilis.

## Archives of Neurology and Psychiatry, Chicago

**14:** 581-730 (Nov.) 1925

"Word Blindness" in School Children. S. T. Orton, Iowa City.—p. 581.
*Closed Foramina of Luschka in Brains of Insane. J. F. Bateman, Cincinnati.—p. 616.
*Is Encephalitis an Infectious, Epidemic Disease? S. R. Salzman, Toledo, Ohio.—p. 638.
*Reactive Gliosis in Case of Brain Tumor. W. Freeman, Washington, D. C.—p. 649.
*Psychosis Associated with Trauma of Head. A. E. Taft and E. A. Strecker, Philadelphia.—p. 658.
Significance of "Accessory" Behavior Accompanying Vocal Reactions. L. B. Hohman, Baltimore.—p. 666.
Motor Disturbances in Peripheral Nerve Lesions. L. J. Pollock, Chicago.—p. 675.

**Closed Foramina of Luschka in Brains of Insane.**—An investigation was made by Bateman to determine in adult human material the closed or open condition of the lateral apertures of the fourth ventricle (foramina of Luschka). It was soon found that pouch-like closures of these foramina existed in many of the brains of the insane as well as of some normal persons. The material consisted of 901 brains; 666 were from insane persons, 150 from epileptic persons and eighty-five from presumably normal persons. Eighty-seven closures of the foramina of Luschka were found; sixty-seven of these were unilateral. In brains of the insane the percentage of closures was 11.6; in brains of epileptic persons, 5.3; in normal brains, 2.5. The evidence presented points in one direction; namely, that the marked unilateral deterioration of nervous substance observed in these cases may be interpreted, at least in part, as the result of inadequate circulation with stagnation of the fluid, and an accumulation of waste products due to such a type of obstruction as a closed foramen of Luschka on the same side.

**Is Encephalitis Infectious Disease?**—Salzman reports ten cases of encephalitis showing distinct infection in the gallbladder. These patients were treated for the most part surgically, with remarkable improvement in the encephalitis and clinical recovery in a few days. This experience in Salzman's opinion justifies the assumption that the encephalitis present in these cases was due to selective action of a toxin caused by infection within the gallbladder.

**Reactive Gliosis in Brain Tumor.**—The opinion of older writers that there is actual neuroglia overgrowth throughout the hemisphere which is the seat of a glioma, is borne out by a carefully controlled photographic study made by Freeman on unimpeachable material.

**Psychosis Associated with Trauma of Head.**—Taft and Strecker report a case of trauma sustained in infancy which determined a later developing dural tumor. The patient died at the age of 68, the last thirty-six years of her life being spent in a hospital for mental disease. Her psychosis suffered at the hands of changing psychiatric nomenclature. For many years, it was designated "chronic mania"; later, the opinion veered to dementia praecox. The patient sustained a fractured skull in infancy, and either it alone or in conjunction with the so-called "brain fever" (meningitis?) resulted in a partial left hemiplegia. At the end of the third decade of her life, her personality changed and she began to behave in a manner which, in the light of the injury of the

head, suggested the likelihood of the development of a so-called traumatic constitution. At about this time she was placed in a hospital for mental diseases, and for at least twenty-three years had a psychosis marked by manic-like symptoms, but with enough disintegration to suggest dementia praecox. During all these years, there was only a single reliable objective phenomenon, namely, the "convulsion" six years before, which might have brought the head injury into consideration as an etiologic factor. The brain was removed immediately after the patient's death. On the inner surface of the dura, about at a point corresponding with the lower extremity of the central fissure, was a small, sharply circumscribed tumor, 2 by 1.25 by 1 cm. in diameter. The tissue showed the characteristics of meningeal endothelioma.

## Journal of Industrial Hygiene, Baltimore

7: 481-538 (Nov.) 1925

Rural and Urban Health: II. Comparison of Past Diseases in University Students from Rural and Urban Districts. W. P. Shepard, Berkeley, Calif., and H. S. Diehl, Minneapolis.—p. 481.
Factory and Shop Legislation in Australia. D. G. Robertson, Melbourne, Australia.—p. 491.
Calcium and Tuberculosis; Influence of Inspired Dust on Specific Infection of Lungs. M. S. Iszard, Philadelphia.—p. 505.

## Rhode Island Medical Journal, Providence

8: 177-192 (Nov.) 1925

Visual Standards for Motor Vehicle Operators. J. W. Leech, Providence. —p. 177.
Treatment of Cataract. J. L. Dowling, Providence.—p. 179.
Synergistic Analgesia in Obstetrics. I. H. Noyes, Providence.—p. 180.

## Surgery, Gynecology and Obstetrics, Chicago

41: 457-700 (Nov.) 1925

Ureteral Strictures, Kinks and Abnormal Inserts. D. N. Eisendrath, Chicago.—p. 557.
*Fractional Ligation of Common Carotid Artery in Treatment of Pulsating Exophthalmos. H. H. Kerr, Washington, D. C.—p. 565.
*Study of Menstruation. S. D. Ludlum and E. McDonald, Philadelphia. —p. 569.
*Bronchoscopic Treatment of Lung Abscess. M. C. Myerson, New York. —p. 573.
Apophysitis of Os Calcis. P. Lewin, Chicago.—p. 579.
Intracranial Hemorrhage in the New-Born. W. Sharpe and A. S. Maclaire, New York.—p. 583.
*Intracranial Complications of Posterior Sinus Infections. E. B. Fink, Chicago.—p. 589.
*Developmental Anomaly of Patella Frequently Diagnosed as Fracture. J. D. Adams and R. D. Leonard, Boston.—p. 601.
Inguinal Hernia and Operative Procedure. R. H. Russell, Melbourne, Australia.—p. 605.
*Persistent or Preformed Sac in Relation to Oblique Inguinal Hernia. W. Hughson, Baltimore.—p. 610.
Primary Spindle Cell Sarcoma of Meckel's Diverticulum. G. W. Crile and U. V. Portmann, Cleveland.—p. 615.
*Retroperitoneal Cysts. H. W. Cave, New York.—p. 617.
Osteitis Fibrosa and Hyperostotic Form of Bone Syphilis. S. F. Wilhelm, New York.—p. 624.
*Peritonitis Ossificans. B. L. Myers, Kansas City, Mo.—p. 640.
Fatty Tumors of Uterus; Case. A. C. Starry, Sioux City, Iowa.—p. 642.
Study of Intramural Portion of Normal and Diseased Tubes with Special Reference to Question of Sterility. S. H. Geist and M. A. Goldberger, New York.—p. 646.
*Value of Leukocyte Count as Aid to Diagnosis in Ectopic Gestation. L. K. P. Farrar, New York.—p. 655.
*Duodenal Ulcer As a Complication of Pulmonary Tuberculosis. J. R. Lisa, Albany, N. Y.—p. 664.
*Total Gastrectomy for Linnitis Plastica. M. R. Reid, Cincinnati.—p. 667.
Technic of Tonsil Operation. E. H. Hutchins, Baltimore.—p. 673.
Blood Transfusion by Direct Syringe-Cannula Needle Method; Its Application in Major Surgery. A. A. Strauss, Chicago.—p. 678.
*Renal Roentgenography During Operation. M. C. Sosman, Boston.—p. 682.
*Simple Method of Determining Patency of Fallopian Tubes. S. Seides, New York.—p. 686.
Maintaining Patients in Prone Position Following Intracranial Operations. L. K. Ferguson, Philadelphia.—p. 687.

**Fractional Ligation of Carotid in Pulsating Exophthalmos.**—Kerr reports three cases of pulsating exophthalmos in which treatment was by common carotid ligation done by the original method of fractional ligation. In all cases the results were as good as could be expected. The operation was done in two stages. First, under local anesthesia, a strip of fascia lata from the thigh was passed around the common carotid below the bifurcation. The artery was gradually constricted until the pulsation of the eyeball ceased, but not to a sufficient extent to produce signs of cerebral anemia. The patient, being conscious, was able to cooperate in guiding the operators to a nice exactness of the extent of occlusion that could be made on the artery, short of producing serious symptoms. When this had been accomplished, the fascial band was sutured in situ with chromic catgut. The lumen of the artery had been reduced by about 50 per cent. by the maneuver. The wound was then closed. The immediate results were gratifying, in that the patient was not aware of the previous annoying bruit, though it could still be heard with the stethoscope. Three weeks later the vessel was again exposed through the former incision, and the common carotid artery ligated with a double ligature above the fascial band.

**Nature of Menstruation.**—The conclusion is reached by Ludlum and McDonald that menstruation is a time of vagotonia or vagus stimulation and that this can be shown in the smooth muscle reaction of the intestine. The wave of vagus preponderance begins from eight to two days before menstruation, reaches its height during the menstruation and returns to the intermenstrual condition from three to six days after menstruation. There is some evidence that among other factors this vagus preponderance is, in part at least, due to the accumulation of calcium in the blood and tissues and that calcium is cast off at the time of menstruation. It is possible that some of the preliminary pains of menstruation are due to intestinal cramps from vagus stimulaton. Drugs and salts which reduce the vagus stimulation relieve the menstrual pain.

**Bronchoscopic Treatment of Lung Abscess.**—A review of thirty-two cases of lung abscess in which bronchoscopy was systematically done by Myerson is given. Six patients were cured; nineteen were improved and four received no benefit from the treatment. Two patients died.

**Intracranial Complications of Posterior Sinus Infections.**—A case of suppurative posterior ethmoiditis and sphenoiditis with complete destructon of the optic nerve is described by Fink. The true intracranial pathologic condition was overlooked because attention was focused on the obvious manifestations of syphilis. The unilateral exophthalmos and primary optic atrophy should have suggested cavernous sinus thrombosis, but the patient entered the hospital in the terminal stages when the acute manifestations of nasal infection were forgotten. There was no evidence either grossly or microscopically of syphilitic involvement of the bony walls of the sinuses. The only influence of syphilis on the pathologic condition in this case was the interference with proper drainage produced by syphilitic scars in the nasopharynx.

**Patellar Anomalies Mistaken for Fracture.**—In a series of thirty-six cases of fractured patella reviewed by Adams and Leonard, in over 3 per cent. congenital anomalies were erroneously diagnosed as fractures.

**Persistent Sac in Inguinal Hernia.**—In a series of cases in which the inguinal canal was opened on account of a relaxed ring and in which no clinical evidence of hernia was seen, in every instance a small persistent sac was found. Analysis of a group of cases by Hughson shows that 16 per cent. of the patients presenting hernia on one side eventually develop hernia on the opposite side. It is felt that correlation of these facts lends further strong support to the preformed sac theory in regard to the etiology of all inguinal hernia. A study of 100 consecutive cases of both single and double herniotomies has shown that the double operation increases the incidence of postoperative pulmonary infections, but it does not increase the incidence of wound infection.

**Retroperitoneal Cyst.**—Cave reports a case of cystic tumor of the retroperitoneal space, not attached to any solid or hollow viscus, but supposedly originating in vestigial remains of fetal structures.

**Peritonitis Ossificans.** — Myers reports an ossification, apparently analogous to myositis ossificans, deserving the nomenclature of "peritonitis ossificans." Search of the literature has failed to reveal a similar case. The mass, measuring 4 by 9 by 12 mm., was found about the tip of an atrophic appendix. It was surrounded by omentum, which closely adhered to the mass in all of its nonappendiceal attachments.

The portion attached to the appendix was so firmly fixed that the peritoneal coat was stripped off in delivering the mass.

**Leukocyte Count as Diagnostic Aid in Ectopic Gestation.**—Farrar has reviewed 150 cases of ectopic gestation with reference to the leukocyte count. He found that it fluctuates according to the amount of fresh blood being thrown into the peritoneal cavity and the rate of absorption. The leukocyte count tends to drop quickly to normal as the blood in the peritoneal cavity is absorbed or walled in; in 48 per cent. of 150 cases of ectopic gestation, there was a normal leukocyte count before operation was performed. The leukocyte count was normal in twenty-nine cases of unruptured tubal pregnancy in which there was no free blood and in forty-three cases of ruptured pregnancy in which the blood was walled in. The leukocyte count was an index in 150 cases to the amount of free blood in the peritoneal cavity, and the polymorphonuclear leukocyte count was increased markedly only in cases showing fresh blood in the pelvis and increased in direct proportion to the amount of recent blood found at the time of operation. The fluctuating leukocyte count, together with the moderate elevation of temperature, differentiates ectopic gestation from a purulent salpingitis with its more uniformly high leukocyte count and fluctuating temperature. In cases of rupture of tubal pregnancy the steadily rising leukocyte count indicates active bleeding before the fall in the number of red cells or hemoglobin gives warning of the condition. The leukocyte count, to be of diagnostic value, must be taken at least daily and in critical cases even hourly and used in conjunction with the history and clinical findings in the case.

**Relation of Duodenal Ulcer to Pulmonary Tuberculosis.**—In an effort to procure additional information bearing on the relation of duodenal ulcer to pulmonary tuberculosis, Lisa has reviewed two series of necropsies performed by him. One of the series consists of 257 necropsies in cases of pulmonary tuberculosis, including cases in which the tuberculosis was primary in other systems but also showing pulmonary involvement; and for comparison, another series of 209 necropsies which showed no tuberculosis. In the first group there were nine duodenal ulcers; in the second group, four. The ulcer is usually nontuberculous in character. Pulmonary tuberculosis associated with duodenal ulcer is usually of chronic form. The age of most frequent occurrence of ulcer is from 25 to 35 years.

**Total Gastrectomy for Linnitis Plastica.**—Reid reports a case of linnitis plastica treated by a complete excision of the stomach. Restoration of the continuity of the alimentary tract was effected by an esophagojejunal and a jejunojejunal anastomosis. A study of the stomach revealed a diffuse sclerosing type of scirrhus carcinoma which involved all of the stomach except a small portion of the fundus. This operation was done in November, 1924. The patient, aged 51, has continued to take a soft diet and has gained weight. She has not vomited, and has recovered her health and strength to such an extent that she is doing her own housework. The only discomfort she experiences now is a sensation of fulness after eating small amounts of food. She is, however, gradually taking more food at a time. The only medication consisted of dilute hydrochloric acid, 10 minims, and pepsin solution, 1 c.c., three times a day. Since leaving the hospital the patient has continued to take the hydrochloric acid but has discontinued the use of the pepsin solution.

**Renal Roentgenography During Operation.**—Roentgenography of the kidney exposed at the operating table is shown by Sosman to be practical as well as practicable, and of great importance in operations for renal calculi. Its advantages over fluoroscopy under the same conditions are discussed. Twenty-five patients have been examined in this manner.

**Determining Patency of Fallopian Tubes.**—Seides uses a sphygmomanometer, a uterine cannula, a T tube, and some rubber tubing. The blood pressure cuff is detached from the syphgmomanometer and the T tube and cannula assembly connected with it. The bulb is worked in the same manner as when one takes the blood pressure. After the cannula is introduced into the cervix and properly adjusted, the bulb is compressed very gently so that the pressure rises only from 5 to 10 points with each compression. After each compression of the bulb the operator pauses a moment to note the rise of the mercury. When the pressure reaches a height sufficient to open the tube (in patent cases) and cause the escape of air into the peritoneal cavity, the mercury begins to drop, and continues to drop, until the pressure becomes equal to the resistance offered by the tube. At that point the mercury remains stationary. The bulb is now compressed again, driving the mercury up from 10 to 20 points. When the bulb is released the mercury falls rapidly to its former height or a little lower. Another compression of the bulb causes a repetition of the previous occurrence. This is evidence that the patency of a fallopian tube has been established. So small is the amount of air introduced by this method that the shoulder pain does not appear until after the patient has been up and about for several minutes. This pain though definite and unmistakable is so mild that, as a rule, it does not interfere with the patient's customary activities and disappears entirely within twenty-four hours.

## U. S. Naval Medical Bulletin, Washington, D. C.

**23:** 329-444 (Nov.) 1925

Vital Capacity Test. D. Ferguson.—p. 329.
*Expediting Diagnosis of Syphilis by Employment of Kahn Precipitation Test. J. E. Houghton.—p. 347.
Surgery of Bladder. W. S. Pugh.—p. 354.
Surgical Treatment of Suppurative Otitis Media in Children. G. B. Trible.—p. 362.
Centers of Endemic and Prevalent Disease in China. H. E. Coe.—p. 368.
Use of Chlorin Gas at Naval Training Station, Hampton Roads, Va. W. C. Espach and O. Wildman.—p. 373.
Pilonidal Sinus; Three Cases. W. A. Strauss.—p. 376.
*Polioencephalitis or Acute Inferior Encephalitis; Case. C. D. Middlestadt. —p. 379.
Ulcerative Colitis; Case. H. M. Weber.—p. 384.
Blood Transfusion. J. L. Thornton.—p. 387.

**Kahn Test for Syphilis.**—In Houghton's opinion, the Kahn test possesses superior qualities over the Wassermann reaction and the various precipitation procedures now in use. It offers a standard and stable antigen which can readily be prepared in a central laboratory for supplying other laboratories. It offers a diagnostic procedure with serum, the specificity of which has not been questioned by a large number of workers. The procedure appears to be superior to any test available at this time, being influenced neither by contamination nor by anticomplementary properties. The Kahn test further offers a quantitative procedure which is of especial value as a check on treatment. None of the procedures of the Kahn test require incubation, all reactions being completed on mixing the ingredients and shaking for a few minutes. This renders it possible to obtain the results at any time instead of the usual once or twice a week serologic examinations.

**Acute Hemorrhagic Encephalitis.**—A fatal case of acute hemorrhagic encephalitis, with both inferior and superior involvement, but with symptoms which point to the predominance of the inferior type, toxic in origin, probably infectious and brought on and aggravated by trauma, is reported by Middlestadt. The symptoms presented in this case were probably due to the hemorrhages in the base of the brain and in the third and fourth ventricles.

## West Virginia Medical Journal, Huntington

**21:** 561-616 (Nov.) 1925

Conservative Trend in Gynecology. P. B. Bland, Bluefield.—p. 561.
Comparison of Nitrous Oxid and Ethylene Anesthesia. L. D. Norris, Fairmont.—p. 580.
Plea for Tonsil. W. T. Booher, Wellsburg.—p. 590.
Tonsil Question. E. R. McIntosh, Elkins.—p. 594.
Object and Workings of "Professional Relationship Committee." J. R. Schultz, Charleston.—p. 599.

## Wisconsin Medical Journal, Milwaukee

**24:** 287-350 (Nov.) 1925

General Biologic Considerations. M. F. Guyer, Madison.—p. 288.
Biologic Basis of Immunity. K. E. Kassowitz, Milwaukee.—p. 300.
Influence of Ductless Glands on Biologic Reaction. E. C. Kendall, Rochester, Minn.—p. 303.
Cell Reactions in Resistance and Immunity. C. H. Bunting, Madison. —p. 305.
Care of Insane. H. H. Christopherson, Colby.—p. 311.
Treatment of Finger Infections. R. M. Carter, Green Bay.—p. 312.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Bristol Medico-Chirurgical Journal

42: 157-200 (Autumn) 1925

Diagnosis of Scarlet Fever. J. Wallace.—p. 157.
Comparative Efficiency of Local Anesthetics. E. Watson-Williams.—p. 164.

### British Medical Journal, London

2: 727-774 (Oct. 24) 1925

*Heredity in Relation to Mental Disease. F. Mott.—p. 727.
Sensitization and Desensitization in Skin Disease. H. MacCormac.—p. 731.
*Biochemical Characters of Certain Bacteria. A. Castellani.—p. 734.
Rôle of Surgery in Treatment of Backward Displacement of Uterus: Discussion. I. F. Ivens.—p. 736.
H. H. R. Andrews.—p. 739.
H. R. H. Paramore.—p. 740.
Pathology and Treatment of Erosion of Cervix. G. I. Strachan.—p. 743.
Obstruction Due to Gallstone. J. Livingston and G. Alexander.—p. 745.
Protein Shock in Epidemic Encephalitis. J. R. Collins.—p. 745.
Epidemic of Mumps. E. J. C. Dicks.—p. 745.

**Heredity in Relation to Mental Diseases.**—From a practical consideration of the subject of insanity, Mott says it is very necessary to recognize that the germ cells of every person who is certified as insane and sent to a mental hospital are not necessarily possible potential transmitters of a mental disease. General paralysis of the insane and many other microbic infections leading to disordered mental functions are acquired diseases and are not hereditary. Nor is it right to assume that simple senile decay affecting the brain is transmissible, yet a large percentage of inmates of asylums are sent there on account of senility. These legal administrative conceptions of mental disease must therefore vitiate all statistics in respect to heredity as a cause of mental disease, because based on data in which admission to a mental hospital are in many instances the sole evidence. This does not apply to the same extent to carefully recorded pedigrees; but even these are not free from error, for often all the information that can be obtained is that one or more members of the stock has been in an asylum. Mott says further that the term "hereditary syphilis" is a misnomer. Much may happen while the embryo is still in utero. The normal biologic processes of nutrition of the developing embryo may fail; abnormal mechanical conditions may arise in the uterus, interfering with the proper development of the embryo; or mechanical conditions in the process of development of the embryo may arise, interfering with the development of the structure. Of all the structures in the body of the embryo likely to be affected by a departure from normal dynamic biologic conditions of growth, the great brain or cerebrum is the most likely. Many mechanical failures and accidents may occur, interfering with the vascular supply of nutrition of the rapidly proliferating cells, whereby the process may be arrested altogether, as in anencephaly, or partially arrested, as in the brain of the idiot or low grade imbecile. There is evidence of a possible vascular cause through a lack of correspondence in a normal rate of growth of the dura mater and soft membranes and the growth of the brain. Because of this, the veins enter the longitudinal sinus in a direction opposite to the current of the blood stream in the frontal lobes—an anatomic condition that favors venous stasis. Again, prolonged labor and difficulties in delivery requiring the use of instruments may be responsible for injury of the brain.

**Biochemical Characters of Bacteria.**—It appears from Castellani's experiments that, with regard to certain bacteria, when two species live in association or are artificially mixed, their mixture may present certain biochemical characters that neither species possesses when living separately. For example, *B. typhosus* alone produces acidity, never gas, in maltose, mannitol and sorbite; *B. morgani* alone produces neither acidity nor gas in these substances; the mixture *B. typhosus* plus *B. morgani* produces, however, both gas and acidity, although one would expect that by adding to a germ, which produces a simple acidity and never gas, one that produces neither acidity nor gas, there would still be only production of simple acidity. The phenomenon of fermentation with production of gas of certain substances, such as maltose, mannitol, and sorbite, by adding to a germ, which produces in them simple acidity and never gas, a germ that is apparently inert on those substances—that is, produces alone neither acidity nor gas in them—seems to depend to some extent on the fermental powers of the second germ on certain other carbohydrates. For instance, not all bacilli inert on mannitol will cause production of gas in that substance when added to *B. typhosus*, which produces in it only acidity; a condition for the phenomenon to take place seems to be that the added germ, although inert on mannitol, must be capable of producing acidity and gas in glucose. It must be noted, however, that not every organism producing gas in glucose and neither acidity nor gas in mannitol will cause production of acid and gas in the latter substance when added to a producer in it of simple acidity, such as *B. typhosus*.

### Lancet, London

2: 899-952 (Oct. 31) 1925

Pituitary Gland as Now Known. H. Cushing.—p. 899.
Physiology of Muscular Action. A. S. B. Bankart.—p. 906.
*Nature of Urinary Protein. A. Hynd.—p. 910.
Case of Abdominal Lymphadenoma. L. R. Shore and W. A. Young.—p. 915.
*Globulin and Colloidal Gold Reactions of Cerebrospinal Fluid After Malarial Treatment of General Paralysis of Insane. J. E. Nicole and J. P. Steel.—p. 917.
Traumatic Lesion of Cauda Equina; Laminectomy; Recovery. E. R. Carling and H. Carlill.—p. 917.
Intestinal Hemorrhage Controlled by Coagulen. L. C. D. Irvine.—p. 918.

**Nature of Urinary Protein.**—Experimental evidence is submitted by Hynd which shows that the protein excreted in the urine in various conditions is not always identical. In the twelve cases investigated of "albuminuria of pregnancy" without convulsions, the specific rotation of the urinary albumin averaged —55.81 degrees and thus agreed with that found for human serum albumin under similar treatment; namely —54.47 degrees. A similar close agreement in specific rotation, namely, —54.25 degrees, was found in five cases of proteinuria not associated with pregnancy. On the other hand, the fourteen cases of eclampsia investigated were sharply divided into two groups, one group of six having an average $[\alpha]_D$ of —56.37 degrees, and the other group of eight having an average $[\alpha]_D$ of —38.5 degrees. The optical activity of the albumin in the former group agrees well with that of serum albumin (—54.47 degrees), while that in the latter approximates closely that of cow's lactalbumin (—41.17 degrees). Accordingly, it is suggested (*a*) that in certain types of eclampsia the urinary albumin may be mainly lactalbumin; (*b*) that eclampsia may be an anaphylactic reaction due to the circulation in the blood of this foreign protein; and (*c*) that the mammary gland may be an important factor in the causation of eclampsia.

**Cerebrospinal Fluid After Malarial Treatment of Insane.**—During the observation of eighty cases in which general paralysis was treated with therapeutic malaria, it has been found expedient by Nicole and Steel to reexamine the cerebrospinal fluid in twenty-five cases at varying dates after the termination of the pyrexia. More than half the cases now show a negative reaction to the globulin test, whereas all showed a positive result before treatment. As regards the colloidal gold reaction, even allowing for the human element in taking the readings, the changes more or less correspond in their occurrence with the conversion of a positive globulin reaction into a negative one; furthermore, the change has not only been the "displacement to the left and upward" mentioned by Pappenheim, but is also of the nature of a conversion of a true paretic reading to that more usually associated with a diagnosis of cerebrospinal syphilis. Of those patients admitted in an advanced condition of general paralysis (showing progressive dementia and faulty habits coupled with physical debility), out of a total of twelve, eight have shown no appreciable alteration in the reactions of the cerebrospinal fluid after treatment with malaria. On the other hand, definite changes in these respects have been shown in ten of the thirteen early cases.

## South African Medical Record, Cape Town

23: 397-420 (Sept. 26) 1925

Analysis of 1,250 Confinements of Colored Women in Cape Town. A. S. Wells.—p. 398.
*Results of 143 Consecutive Cases of Suprapubic Prostatectomy. H. T. Mursell.—p. 404.
*Desensitization of Patient Hypersensitive to Bee Stings. L. I. B. Braun. —p. 408.
Nursing Homes: Regulation and Medical Inspection. C. Porter.—p. 409.
*Familial Incidence of Peroneal Type of Progressive Muscular Atrophy (Charcot-Marie-Tooth Disease). I. Mirvish.—p. 411.
Case of Osteitis Deformans. S. E. Kark.—p. 412.
Pellagra in South Africa. J. Drummond.—p. 413.
Bilharzia Disease of Female Genital Tract. R. W. B. Gibson.—p. 413.
Comparison of Cardiac Mortality in Johannesburg, Cape Town and Durban. E. Cluver.—p. 414.
Case of Myelogenous Leukemia. F. H. Dommisse.—p. 415.

**Results from Suprapubic Prostatectomy.**—Of the 143 cases in Mursell's series, sixteen patients died in hospitals or nursing homes, a mortality of 11.2 per cent. Fifty consecutive hospital cases, as distinct from private cases, showed a mortality of 14 per cent. The higher mortality is attributable to the fact that many of the hospital cases are of long standing, and the patients only present themselves for treatment when complete retention compels them to come.

**Desensitization to Bee Stings.**—Braun snipped off the posterior one-eighth inch of the body of the bee. This part of the body contains the poison bag into which leads the acid gland. The poison bag leads directly into the gorget or sting. The poison was extracted by grinding up in saline solution. To test for sensitivity in the patient, Braun scarified an area one-eighth inch square without drawing blood, and applied 1 drop of the solution. Within five minutes the spot became very red, and soon after a wheal formed, which spread rapidly. Within a further three minutes, the patient began to complain of a general reaction. The face and neck started to swell and the conjunctivae became injected. At the same time the patient began a peculiar sort of suffocating cough, which never ceased for more than thirty seconds. A violent tremor set in, which soon became generalized. The pulse mounted to 120, and altogether the patient's condition became rather alarming. The wheal at the site of vaccination became larger and larger, and soon the whole body was covered with a red urticaria which showed up dull white on stretching the skin. As the condition remained the same after about twenty minutes, and as the patient was beginning to show mental distress, Braun injected 10 minims of epinephrin. Gradually the signs and symptoms subsided, with the exception of the trembling, which persisted for some time. During this attack, the patient experienced bearing-down pains and mental anxiety. Desensitization was carried on by injecting gradually increasing doses until the patient was receiving 15 c.c. undiluted venom.

**Familial Incidence of Progressive Muscular Atrophy.**—Four of five children were affected in Mirvish's series of cases. The father and mother apparently were not affected. In all four cases the mode of onset was similar. Up to the age of 17, the patients were perfectly healthy and normal; they attended school, and used to run and play like other children of their age. The onset of the disease was insidious, and the first definite symptom was "lameness" in the lower extremities. There is now flaccid paralysis below the knee and spastic paralysis above it. With assistance they can stand up; they sit propped up in a chair most of the day. Ulcers appeared on the legs and feet and still occur frequently, but they heal well, as a rule. In the case of two brothers, no edema of the legs has been observed during the last two years. They both showed pes equino varus; the leg muscles show atrophy, more marked on the right side than on the left. The anterior aspects of the legs and dorsum of the feet have areas of glossy skin and pigmented scarring of healed ulcers. In the woman, there is considerable edema of the feet, pitting on pressure; owing to the edema, the presence of any atrophy of muscles cannot be made out. The woman also has scars of ulcers. The patients all show atrophy of the small muscles of the hand. This is most marked in the woman, who also has wasting in the distal part of the forearm. Blueness and cyanosis of the legs below the knees, and, in the woman, below the elbows, rapidly develops when the extremities are in a dependent position for a short time. The patients are fatuous and childish in many respects. Their intellect is very poor, and answers to questions are very often erroneous. There is also wasting of the muscles below the knee and the small muscles of the hands, especially the thenar and hypothenar muscles, and paralysis of the muscles of the leg and foot. The knee cannot be bent because the muscles of the thigh are spastic. Some spasticity of the hands is also present. Muscular coordination is not impaired. Fibrillary twitchings occur in the muscles of the thigh, in the thenar and hypothenar eminences, and in the temporal and masseter muscles. Peronei of the right leg do not respond to the faradic current; all other muscles of the legs do.

## Tubercle, London

7: 1-56 (Oct.) 1925

Treatment of Disease with Heavy Metals and Bactericidal Agents. W. E. Dixon.—p. 1.
*Combating Tuberculosis in Denmark. J. Ostenfeld.—p. 6.
Results of Artificial Pneumothorax and the Rôle of Other Operative Collapse Procedures in Treatment of Phthisis. R. C. Matson, R. W. Matson and M. Bisaillon.—p. 12.
Specific Inflammatory Reactions Accompanying Immunity. E. L. Ore. —p. 23.
Conditions Necessary to Arouse Allergic State in Tuberculosis; Immunity Through Fixation of Bacteria. A. K. Krause,—p. 29.

**Combating Tuberculosis in Denmark.**—In 1905 the Danish Rigsdag passed the Danish Tuberculosis Acts which, through the very comprehensive provisions regarding state grants, rendered it possible to introduce an extensive attack on the disease. Isolation and treatment in hospitals of patients suffering from tuberculosis were made the chief points. Owing to the extensive provisions of state grants provided under the Danish Tuberculosis Acts, it was rendered possible to found a sufficient number of hospital beds, partly in sanatoriums erected by means of considerable grants-in-aid from the state in connection with considerable contributions provided through the intense efforts of private individuals, partly in tuberculosis hospitals built by the municipalities, and also by means of state grants. Every person suffering from tuberculosis and without means can be treated free of charge, and in the case of destitute persons the municipality further has to contribute to the support of the family as long as the breadwinner is under treatment in hospital or sanatorium. In addition the tuberculosis acts contain very comprehensive provisions in other directions, of which the following should be specially noticed: (1) obligatory notification of all cases of pulmonary or laryngeal tuberculosis; (2) disinfection, free of charge, on deaths due to tuberculosis, or on removal of a patient suffering from tuberculosis; (3) examination, free of charge, of sputum, in order to verify tubercle bacilli; (4) education, free of charge, of children suffering from pulmonary tuberculosis, in special departments or schools; (5) definite provision as to grant-in-aid from state and municipality for the working expenses of tuberculosis stations (dispensaries). In 1922, 4,907,400 gold francs were appropriated for this work. At present there are seventy-two tuberculosis institutions with 3,458 beds. In 1900, before this act was in force, there were twenty-three deaths per 10,000 population. In 1923, there were 9.6 per 10,000 population.

## Annales de Médecine, Paris

18: 167-246 (Sept.) 1925

*Tabes with Osteitis Deformans. G. Guillain and N. Péron.—p. 167.
Localized Form of Achondroplasia. R. Porak.—p. 179.
*Sugar in Cerebrospinal Fluid. Fontanel et al.—p. 186.
*The Hemotonia Factor in Sedimentation Test. Balachowsky.—p. 201.
Development of the Nervous System. J. Lhermitte.—p. 209.

**Tabes Associated with Osteitis Deformans.**—Guillain and Péron point to their case, in a man, aged 54, which may confirm the syphilitic origin of certain cases of Paget's disease. The spontaneous fracture of the femur in their case might be ascribed to the tabes as well as to the osteitis deformans.

**Diagnostic Value of the Sugar Content of the Cerebrospinal Fluid.**—Fontanel, Leulier and Rouquier conclude from 350 tests of the cerebrospinal fluid that a reduced amount of the sugar may help in differentiation of tuberculous meningitis from epidemic encephalitis in which the

sugar is usually increased. No diagnosis can be based on an exaggerated sugar content since this may be encountered in normal subjects as well as in various pathologic conditions.

**The Hemotonia Factor in the Sedimentation Test.**—Balachowsky applies this term to express the elasticity of the erythrocytes. The less the elasticity, the lower the upper surface of the sediment.

## Archives des Maladies de l'Appareil Digestif, Paris

**15:** 631-750 (July) 1925

*Basal Metabolism During Fasting. M. Labbé and H. Stévenin.—p. 631.
*Roentgen Rays and Gastric Secretion. P. Brocq and P. Oury.—p. 644.
Functional Stomach Tests. S. Cytronberg.—p. 664.
Compensation in Small Intestine After Colectomy. A. G. Weiss and P. Porcher.—p. 692.

**The Basal Metabolism in Prolonged Fasting.**—Labbé and Stévenin's research was made on a man, aged 42, voluntarily fasting for forty-one days. Their findings as well as those of several other authors in fasting subjects showed a decrease of the respiratory metabolism. The loss of weight was less in the subject in whom reduction of the metabolism was more pronounced. This fact and the increased metabolism with overeating prove the adaptation of the organism to the intake of food. Evidently the functioning of the endocrine glands is not exclusively responsible for the basal metabolism rate.

**Action of Roentgen Rays on Gastric Mucosa.**—Direct exposure of the gastric mucosa to roentgen rays in Brocq and Oury's experiments showed that the lesions from the rays were circumscribed and comparatively insignificant, even with doses far superior to those ever used in therapeutics. This fact, the authors say, suggests that the roentgen rays may become in the future an effectual and harmless method of treatment for stomach disease in man. They irradiated the mucosa through a stomach fistula (dogs) giving 500 R unit doses at a time, up to a total of 7,000 R units (Solomon ionometer). Secretion fluctuated at first then declined.

## Bulletin de l'Académie de Médecine, Paris

**94:** 917-940 (Oct. 27) 1925

*Remote Results of Sympathectomy. T. Jonnesco.—p. 919.
Monosodium Citrate in Therapeutics. R. Blondel.—p. 931.
*Change of Air in Whooping Cough. Barbary.—p. 936.

**Heart Functioning After Sympathectomy.**—Jonnesco reports cases which, he thinks, prove that sympathectomy is not dangerous, while it is the only effectual operation for angina pectoris. He has collected seventy-four cases in which different methods of sympathectomy were applied; the mortality was about 20 per cent. in all. His cervicothoracic resection was applied in thirty-two cases; in twenty-four, partial cervical sympathectomy (including resection of the stellate ganglion), and resection of the depressor nerve, in eighteen. One man, operated on for angina pectoris nine years before, keeps an employment requiring physical strain, much walking, without any disturbance of the heart. In another a bilateral sympathectomy was made three years ago, and the man still works as a woodcutter. Still another, submitted to a total sympathectomy for exophthalmic goiter twenty-one years ago, served as a soldier in the active army during the war. Two girls treated by bilateral sympathectomy twenty-five years ago, for epilepsy, are at present mothers of six and seven children. No disturbances of the heart appeared during their repeated pregnancies. Left cervicothoracic sympathectomy was applied ten months ago in a man with severe angina pectoris. There has been no recurrence of the attacks of angina pectoris and the condition of the heart is good, notwithstanding severe occupational strain. He reaffirms that the stellate ganglion should be the main point of attack.

**The Change of Air Tradition in Treatment of Whooping Cough.**—Barbary ridicules the popular belief that change of air may check whooping cough. The only effect from transporting a child with whooping cough from one place to another may be the spread of the disease, and therefore it should be strictly forbidden.

## Bulletins de la Société Médicale des Hôpitaux, Paris

**40:** 1339-1368 (Oct. 30) 1925

*"Hemophilia-Hemogenia." L. Babonneix.—p. 1339.
*Parkinson's Disease with Syphilis. Babonneix and Pollet.—p. 1340.
Multiple Affection of Glands or Tuberculous Lymphomas? L. Babonneix and L. Pollet.—p. 1341.
"Lambliasis of the Gallbladder." M. Chiray and J. Lebon.—p. 1344.
*Tumor of the Frontal Lobe. Lechelle et al.—p. 1347.
The Course of Endocarditis. M. Renaud.—p. 1352.
*Glucose Regulation in Infectious Disease. Labbé and Boulin.—p. 1358.

**"Hemophilia-Hemogenia."** — Babonneix cites Heberden, who described in 1802 a case of joint disease similar to that in hemophilia, associated with fragility of the vessels manifested by spontaneous appearance of ecchymoses.

**Nonspecific Affection of Central Nervous System in a Syphilitic.**—Babonneix and Pollet observed a case of typical Parkinson's disease in a syphilitic man, aged 47. The contrast between the strongly positive Wassermann reaction in the blood and the completely normal cerebrospinal fluid indicated that the coexisting paralysis agitans was of nonspecific nature.

**Tumor of Frontal Lobe.**—Lechelle and his co-workers report two cases in which recurring attacks of somnolency formed the early and predominant symptom. In the first case the narcolepsy developed into coma, simulating epidemic encephalitis; in the other it was followed by progressing hemiplegia. Lumbar puncture and clinical signs revealed intracranial hypertension from a brain tumor. The early narcolepsy had suggested the diagnosis of a tumor located in the infundibulum, or area of the third ventricle. Necropsy showed a glioma of both frontal lobes in one case, and tuberculoma of one frontal lobe in the other.

**Derangement in Sugar Regulation in Course of Infections.**—Labbé and Boulin applied the alimentary hyperglycemia test in twelve patients with various infectious diseases. During fasting, the glycemia appeared slightly increased. The rise and fall of the glycemia curve was four times longer than usual; the maximum of hyperglycemia increased by 50 per cent. The hyperglycemia triangle was ten times larger, thus revealing an important change of the sugar regulating balance. Alimentary glycosuria was noted in 75 per cent. The disturbance of glucose regulation did not parallel the gravity of the infection; as was shown in cases of typhoid and febrile rheumatism. The impairment of the glucose balance sometimes became more pronounced during convalescence, and persisted for weeks, even months after recovery from the infection. This paradiabetic condition occurred chiefly in young subjects and seemed to disappear completely. No signs of an insufficient functioning of the liver could be detected. It is possible that recurrences of this transient disturbance of glucose balance create a true diabetes more frequently than hitherto believed.

## Paris Médical

**57:** 361-396 (Nov. 7) 1925

Pediatrics in 1925. P. Lereboullet and Saint Girons.—p. 361.
Subcutaneous Injections of Milk. Marfan and Turquety.—p. 377.
Isolated Glandular Lesions After Scarlet Fever. P. Nobécourt and L. Lebée.—p. 385.
*Peptic Ulcer in Children. E. Stulz and P. Woringer.—p. 387.
Masked Congenital Syphilis. P. Lereboullet and J. Brizard.—p. 393.

**Peptic Ulcer in Meckel's Diverticulum in Children.**—Stulz and Woringer refer to two personal cases and eleven in the literature. The ages ranged from 5 months to 15 years, and the lesion developed exclusively in boys. Profuse intestinal hemorrhage is the first symptom, and also the most constant complication. It is characterized by an unchanged color of the blood, and the tendency to recurrence. The hemorrhage may persist a few days or even weeks, causing grave anemia and death. Perforation of the ulcer occurred in ten of the thirteen cases. Seven died from perforation with generalized peritonitis; one from anemia with localized peritonitis; the remaining five were saved by an operation. They cite the points differentiating this affection from a perforated diverticulitis, intestinal invagination and polyp or tumor of the large intestine. Treatment has to be essentially surgical.

## Presse Médicale, Paris

33: 1425-1440 (Oct. 28) 1925

*Skin Reaction to Wine in Gout. F. Widal et al.—p. 1425.
*Ossification of Fractures. R. Leriche and A. Policard.—p. 1426.

**Skin Reaction to Wines in Gout.**—Tests were made with different wines in nineteen patients, aged from 30 to 72, in various stages of articular gout. An intense reaction was manifest in three cases, a slight in thirteen and the response was negative in three. The reaction was negative in thirty-nine of forty-four persons, healthy or with another disease. Widal and his co-workers emphasize that the sensitization of the gouty patients seemed to be induced always only by one kind of wine.

**Mechanism of Healing of Fractured Bones.**—Leriche and Policard summarize the process of ossification. The traumatic hemorrhage is followed by formation of clots and appearance of embryonal connective tissue. Congestion in the area of fracture induces bone resorption and production of calcium salts. The two facts cause ossification, occurring by the sixth to the tenth day. Healing is prevented if one of these factors is lacking.

33: 1441-1456 (Oct. 31) 1925

*Polyneuritis with Epidemic Encephalitis. Bériel and Devic.—p. 1441.
*Etiology of Endemic Goiter. A. Ravina.—p. 1442.

**"Peripheral" Form of Epidemic Encephalitis.**—Bériel and Devic describe two personally observed cases and one of Sicard's with clinically associated phases of epidemic encephalitis and polyneuritis. The virus of epidemic encephalitis can evidently affect the peripheral nerves and roots as well as the meninges. The prognosis of this polyneuritis is favorable; it persists from one to five or six months, but without inducing any notable atrophy of the muscles. The differentiation from acute anterior poliomyelitis may be based on the milder invasion of the disease, and the slower appearance of paralysis. The usual treatment for polyneuritis should be applied in these cases.

**Intestinal Virus as Factor in Etiology of Goiter.**—Ravina analyzes the different theories of endemic goiter. He believes that McCarrison's experiments on man and animals in India present strong evidence in favor of the etiologic significance of water contaminated with fecal matters from persons with goiter. Although the specific virus still eludes discovery, there is much to sustain the theory of an infectious, intestinal origin.

## Schweizerische medizinische Wochenschrift, Basel

55: 993-1016 (Oct. 29) 1925

*Local Spasms of Muscles. R. Bing.—p. 993.
Roentgen-Ray Examination in Accident Cases. G. Baer.—p. 1000. Begun p. 975.
*"Hystero-Epilepsy." E. Bleuler.—p. 1005.
*Autoserotherapy in Pleurisy. D. Pometta.—p. 1005.

**Local Spasms of Muscles.**—Bing analyzes various tics and local spasms and their relation to hyperkinesis of subcortical origin. He believes that various hysterical symptoms are also directed from these centers. In this case the inhibition exerted by the superior centers on the ontogenetically and phylogenetically older automatic centers is removed by the psyche—not by organic disease, as in encephalitis. He explains the resemblance between the symptoms of a major hysterical attack and those of coitus partly by denying it, partly by pointing out that coitus is the only ecstasy-producing, that is, inhibitions-releasing occasion for civilized people. (Die einzige Gelegenheit bei welcher der gesunde, nüchterne Kulturmensch unserer Zeit noch in "Ekstase" zu geraten pflegt; beim Hysteriker aber vermögen auch andere affektgeladene Situationen Enthemmungsphänomene freizumachen). Bing emphasizes that the effect of psychotherapy does not exclude an organic basis for a disease.

**Hystero-Epilepsy.**—Bleuler protests against the use of the term "hystero-epilepsy." With the same logic, we would have to call a combination of tabes and tuberculosis, "tuberculo-tabes."

**Autoserotherapy in Pleurisy.**—Pometta finds that the beneficial effects of autohemotherapy in pleurisy are doubtful. There can be no doubt, however, as to the possibility of inoculating tuberculosis subcutaneously.

## Pediatria, Naples

33: 1141-1196 (Nov. 1) 1925

*Diphtheria Immunization with Schick Tests. Ivo Nasso.—p. 1141.
*Atypical Malaria in Children. G. Macciotta.—p. 1151.
*Vitiligo and Congenital Syphilis. P. Fornara.—p. 1170.
Congenital Dislocation of the Hip-Joint. N. Caprioli.—p. 1182.

**Diphtheria Immunization with Schick Tests.**—Nasso confirmed a weakening of the Schick test if repeated after ten or fifteen days. Three or four such tests were sufficient to change the response to negative. Estimation of the antitoxin content in the serum of such children showed that the immunization is real.

**Atypical Malaria in Children.**—Macciotta points, among others, to a hypothermic form.

**Vitiligo and Congenital Syphilis.**—Fornara observed nine cases of vitiligo among 3,000 children. Congenital syphilis was certain in four, doubtful in two, and excluded in three of his nine cases. Vitiligo may occur also in acquired syphilis.

## Riforma Medica, Naples

41: 961-984 (Oct. 12) 1925

*Passage of Intestinal Germs into the Circulation. Pansini.—p. 961.
Tuberculosis of Appendix. G. Razzaboni.—p. 965.
*Antagonism of Superficial and Visceral Arteries. C. Trunecek.—p. 968.
Mega-Ureter. E. Aievoli.—p. 971.

**Passage of Intestinal Germs Into the Circulation.**—Pansini concludes from his investigations that in weakened conditions and in intestinal diseases some germs may penetrate from the bowel into the general circulation.

**Antagonism of Superficial and Visceral Arteries.**—Truneček attributes the antagonism between peripheral and visceral vasoconstriction to the different structure of the arteries, especially the arrangement and thickness of the longitudinal and circular muscle layers

## Brazil-Medico, Rio de Janeiro

2: 81-94 (Aug. 15) 1925

*Periarterial Sympathectomy. A. Valerio.—p. 81.
Case of Epispadias. J. R. da C. Doria.—p. 84.
Keratitis in Congenital Syphilis. E. Campos.—p. 89.

**Periarterial Sympathectomy.**—Valerio removed the adventitia of the femoral artery for a stretch of 12 or 15 cm. on each side in treatment of bilateral mal perforant. The interval between the operations was nearly three weeks. A few days after each operation the trophic ulcers began to bleed and presented an intense inflammatory reaction, then rapidly healing over. The man had a history of malaria and syphilis but saturation with quinin and with arsphenamin had not modified the lesions on the feet. The long rebellious mal perforant on one foot in another case healed over in twelve days. In a third case the patient refused to allow the intervention—scoffing the possibility of curing an ulcer on the foot by operating on the thigh—and fatal gangrene soon followed.

2: 123-142 (Sept. 5) 1925

*Tropical Ulcer. P. Mangabeira Albernaz.—p. 123.
Digestive Leukocytosis. A. L. Pimenta Bueno.—p. 127.

**Treatment of Tropical Ulcer.**—Mangabeira Albernaz has been treating tropical ulcer by different methods but found bismuth the most effectual. He used the acid tartrate-bismuthate of potassium and sodium in sixty-four cases, and states that all pain disappeared by the second to the fourth hour and the lesion cleared up promptly while the fusiform bacilli, spirochetes and other germs were reduced to a half in twenty-four hours. One boy aged 6 had six different ulcers; each was given different local treatment. The one treated with bismuth healed much more promptly than the others. One man had an extremely painful ulcer on the foot which had resisted all treatment for two years but healed in seven days under five applications of the bismuth.

## Medicina Ibera, Madrid

**19:** 317-344 (Oct. 10) 1925

*The Pyelovenous Reflux. Larrú and Aguilar Sarmiento.—p. 317.
Creatinuria in Tuberculosis. J. Valdés Lambea.—p. 321.

**Pyelovenous Reflux.**—Larrú and Aguilar Sarmiento conclude from their experiments on animals and on recently extirpated kidneys that it is possible to inject a contrast suspension directly into the veins of the kidney, without rupture or extravasation, simply by forcing the fluid into the ureter. Conditions in pathologic kidneys favor this reflux, and it is probably the explanation for the mishaps that have been observed with pyelography.

## Revista Médica Latino-Americana, Buenos Aires

**10:** 1181-1294 (Aug.) 1925

*Fetal Bradycardia. R. A. Bullrich.—p. 1181.
Study of Galop Rhythm. L. Galíndez.—p. 1185.
*Regional Fibro-Angiomatosis. Siffredi and de Rabinovich.—p. 1199.
Therapeutic Restriction of Fluids. Cesar Cardini.—p. 1204.
*Paroxysmal Hemoglobinuria in Child. Marín and Coutts.—p. 1218.
Dermatoses. Amaury Pasqualis Politi.—p. 1221. C'tn.

**Excitability of Tawara's Node.**—The tracings from a case of septal bradycardia of presumably syphilitic origin showed block of the Keith-Flack node. The occasional auricle waves preceding the ventricle seemed to start in Tawara's node. Under inhalation of amyl nitrite, the pulse increased to 120, but the auricles did not contract.

**Regional Episodes of Fibro-Angiomatosis.**—Crops of tumors developed and retrogressed without leaving a trace, each crop accompanied by the symptoms of an acute infection. There were never any chills, and the sudden drop of the temperature to normal was not followed by sweating. No treatment displayed any efficacy except perhaps spleen organotherapy, and this effect was transient. The patient was a woman, aged 30.

**Paroxysmal Hemoglobinuria.**—In the case described, in a boy, aged 4, with signs of congenital syphilis, the paroxysms of hemoglobinuria were preceded by jaundice. There have been no further attacks since a course of treatment for the congenital syphilis.

## Revista Médica de Yucatán, Merida

**13:** 85-108 (Aug.) 1925

*Precocious Menstruation. E. Farfán López.—p. 85.
The Surgeon and the Problems of Workmen's Compensation Cases. D. Couoh Vásquez.—p. 92.
Pellagra and Vitamins. R. Carrancá y Trujillo.—p. 96. C'cn.

**Precocious Menstruation.**—Farfán López' patient was a child of 9 with signs of old rickets and the lymphatic temperament, mentally and physically backward. She had been having a menstrual flow for a month and the anemia was extreme. The hemorrhages had resisted the usual hemostatics, but were arrested by thyroid treatment. During the three months since apparently physiologic menses have returned at the normal dates. Ten days before each the thyroid treatment was resumed. The general condition has shown marked improvement.

## Semana Médica, Buenos Aires

**2:** 673-740 (Sept. 17) 1925

*Epigastric Hernia. J. R. Goyena.—p. 673.
*Cancer in Female Larynx. H. Zubizarreta.—p. 680.
Traumatic Diaphragmatic Hernia. Olmos et al.—p. 683.
Treatment of Bronchopneumonia. J. Melfi.—p. 687.
Toxic Edema in Liver Disease. Barilari and Hardoy.—p. 706.
*Treatment of Trachoma. Urrets Zavalía.—p. 708.
Relations Between the Semicircular Canals and the Movements of the Eyes in Man. E. Adrogué.—p. 718.
*Labyrinthitis from Traumatism. J. Basavilbaso.—p. 724.

**Gastric Disturbance with Epigastric Hernia.**—Five years of constipation alternating with diarrhea, pains in the stomach not connected with meals, tenderness in the pylorus region, and signs of overexcitability of the parasympathetic nervous system were all explained by a tender reducible epigastric hernia. Strauss has reported four cases of coexisting epigastric hernia and gastric ulcer. If symptoms persist after surgical correction of the hernia, with apparently normal conditions in the stomach, treatment to soothe the overexcitable vegetative nervous system is called for.

**Laryngeal Cancer in Women.**—Zubizarreta's experience indicates that cancer in the larynx is less malignant in women than in men. Deep roentgenotherapy has apparently cured completely in his one case in a woman.

**Subconjunctival Injections of Copper Sulphate in Treatment of Trachoma.**—A 1 per cent. solution with 4 per cent. procain was injected, and 58.3 per cent. of forty-eight patients were cured, and others, to a total of 83 per cent., were more or less improved. Corneal ulcers healed more rapidly than with any other treatment. Nicati's technic was followed.

**Diffuse Labyrinthitis from Foreign Body.**—The efforts to dislodge a grain of corn in the boy's ear drove it farther in. It was extracted the sixth day by a petromastoid operation, the child having presented symptoms of diffuse labyrinthitis in the interim. The corn was in three pieces; this testified to the force that had been applied in the efforts to extract it, which explained also the pus in the middle ear.

**2:** 741-820 (Sept. 24) 1925

*Measles. F. J. Liceaga.—p. 741.
Endonasal Dacryorhinostomy. R. Dellepiane Rawson.—p. 776.
History of Medicine in Argentina. J. Túmburus.—p. 778.
Septicemia Treated with Tuberculin. J. B. Galand.—p. 788.
Appendix in Hernia. E. L. Vila and G. F. Nunes.—p. 791.
Summary of Kinetic Plasmogenesis. A. Mary.—p. 809.

**Measles.**—Liceaga states that the official 23.5 per cent. of mortality from measles in Buenos Aires (1924) is below the reality because the deaths are often credited to the complicating pneumonia or other disease. He comments favorably on vaccine treatment, and advises diphtheria antitoxin with laryngitis in measles, and local measures to abort complications. Fourteen children that had been exposed to measles were injected with convalescent serum and none developed the disease.

## Archiv für klinische Chirurgie, Berlin

**138:** 1-672 (Oct. 20) 1925. Transactions of Surgical Congress

Twenty Years of Transplantation Research. E. Lexer.—p. 251.
Treatment of Acute Occlusion. G. Perthes.—p. 303.
Arterialization of the Blood. G. Hotz.—p. 334.
*Persistence of Implanted Thyroid. A. Eiselsberg.—p. 342.
*Early Diagnosis of Tetanus. A. Buzello.—p. 351.
*Functional Tests of the Circulation. S. Frey.—p. 358.
Resorption of Substances in Ischemic Tissue. C. Ritter.—p. 381.
Food and Wound Healing. A. Herrmannsdorfer.—p. 396.
Blood Supply of Stomach. W. Usadel.—p. 401.
The Medical Publications of the Day. F. Sauerbruch.—p. 428.
*Etiology and Treatment of Megacolon. F. Brüning.—p. 435.
*Resection of Colon in Constipation. H. Finsterer.—p. 449.
Kidney Function Test. Pregl.—p. 489. Idem. Haberer.—p. 493.
Acid-Alkali Kidney Function Test. Rehn.—p. 502.
*Denaturing of Alcohol. Perthes.—p. 510.
Treatment of Cleft Palate. Kirschner.—p. 515.
Growth Energy of Implanted Epithelium. H. Kurtzahn.—p. 534.
Extirpation of Pericardium. V. Schmieden.—p. 552.
*Bacteremia After Operations. E. Seifert.—p. 565.
*Healing of Fractures. A. Schubert.—p. 587.
*Surgery of Acute Osteomyelitis. A. Hedri.—p. 596.
*Dislocation of the Radius in Children. R. Bonn.—p. 602.
Pyloromyotomy. E. Payr.—p. 639.

**Persistence of Implanted Thyroid.**—Twelve years after intra-abdominal implantation of a piece of the thyroid gland, Eiselsberg found a tumor of the structure of an adenoma of the thyroid. The normal tissue of the implant had probably been resorbed, and the adenoma tissue had proliferated.

**Early Diagnosis of Tetanus.**—Buzello injects a suspension of the wound secretion from the patient, subcutaneously, in white mice or other animals. The initial symptoms of tetanus (unilateral or paraplegic rigidity) are characteristic within twelve to twenty-four hours.

**Functional Tests of the Circulation.**—Frey recommends Kauffmann's diuresis test in surgical patients.

**Etiology and Treatment of Megacolon.**—Brüning regards megacolon as a congenital—sometimes inherited—malformation (partial gigantism). It is due to the absence of inhibiting impulses from the vegetative nerves. Some abnormal condition of the vegetative centers of the spinal cord is probable, he says. Mechanical and functional disturbances complete the pathologic development. Resection is the best treatment. He removed in one case 216 cm. of the large intestine.

**Resection of Colon in Constipation.**—Finsterer has resected the colon in thirty-six cases of chronic constipation. The first cases were operated on because of a volvulus. He prefers resection of the left half of the colon—even in the so-called ascending type of constipation. He recommends the method not only in elongation of the colon, but also in spastic constipation, when it resists other treatment and causes pains.

**Denaturing of Alcohol.**—Perthes found that all the compounds allowed in Germany for denaturing of alcohol make it unsuitable for surgical disinfection of the hands. He offered a resolution to appeal to the authorities to allow the use of the Swiss method (addition of 1.5 per cent. of acetone). The motion was carried.

**Bacteremia After Operations.**—Seifert reports on the frequency of bacteremia after surgical interventions. It occurred after nine out of his forty-three appendicitis operations. Although it has not much practical importance, it would be better to prevent it by cautious manipulation and, perhaps, by blocking the focus.

**Healing of Fractures.**—Schubert found that crushing of the bone is followed by a more rapid new formation of bone and consolidation than a simple fracture. This is due to the stronger proliferation of capillaries in the former case.

**Surgery of Acute Osteomyelitis.**—Hedri found lipuria in the grave cases of human and experimental osteomyelitis. Only these cases need immediate opening of the bone. Incision of the subperiosteal abscess is sufficient in the others.

**Dislocation of the Radius in Children.**—Bonn found no excessive growth in length of the radius in cases in which there had been untreated dislocation of this bone in childhood. With a rupture of the annular ligament, necrosis of bone occurs. Yet this does not entail a deforming arthritis—probably because of the absence of pressure on the joint.

## Deutsche medizinische Wochenschrift, Berlin

**51:** 1767-1806 (Oct. 23) 1925


Biologic Problems. H. Much.—p. 1767.
*Weichbrodt's Bichlorid Reaction. H. A. Krebs.—p. 1771.
Basal Cell Cancers. H. Feriz.—p. 1773.
*Shock Treatment in Gallbladder Disease. Hinrichsen.—p. 1774.
Leukocytosis and Constitution. C. Moewes.—p. 1776.
Treatment of Arsphenamin Injuries. F. Dietel.—p. 1778.
Goiter in Northern Germany. E. Lick.—p. 1779.
Vascular Reactions in the Eye. W. Dieter.—p. 1781.
Meinicke Microtest. H. Martin.—p. 1782.
Cisterna Puncture. E. Osann.—p. 1783.
Pigmentation in Typhoid. M. Winkel.—p. 1784.
Roentgenography of Apices. R. Gassul.—p. 1784.
Werlhof's Disease. Büchert.—p. 1785.
Infectious Erythema in Woman. G. Stratmann.—p. 1785.
Dislocation of Vertebra in Version and Extraction. E. Harloff.—p. 1786.
Calcium Metabolism After Pituitary Extract. Diesing.—p. 1787.
Recovery from Landry's Paralysis. Levinson.—p. 1787.
Acute Alcohol Poisoning in Child. H. Kaufmann.—p. 1788.
External Factors in Shape of Skull. A. Bauler.—p. 1788. C'cn, p. 1827.
Morbidity Statistics in U. S. Prinzing.—p. 1788. C'cn.
Selection of Patients for Sanatoriums. J. Ritter.—p. 1791.
Complications of Otitis. L. Joseph.—p. 1805. C'cn, p. 1844.


**Weichbrodt's Bichlorid Reaction.**—Krebs found that the maximum of precipitation of globulins in the cerebrospinal fluid with Weichbrodt's method (mercuric chlorid) occurs at a concentration of 0.25 per cent. albumin.

**Shock Treatment in Gallbladder Disease.**—Hinrichsen found that intravenous injections of foreign proteins may cause the appearance of urobilin in urine independently of a cholecystitis. Its amount does not always increase after these injections in the latter disease.

**51:** 1807-1850 (Oct. 30) 1925


*Epidemiologic Research. C. Prausnitz.—p. 1807.
Colon Bacillus Treatment. A. Nissle.—p. 1809.
The Brain in Paralysis Agitans. K. Kleist.—p. 1813. C'cn.
Treatment of Adnexitis. W. Flaskamp.—p. 1815.
*The Fluid from Induced Blisters in Syphilitic Infants. M. Soldin and F. Lesser.—p. 1817.
Pruriginous Eczema in Polycythemia and Asthma. Werther.—p. 1819.
Sanocrysin in Experimental Tuberculosis of the Eye. Krusius.—p. 1821.
Preservation of Culture Media. F. v. Kováts.—p. 1822.
Staining of Elastic Fibers. E. A. Schubenko-Schubin.—p. 1823.
Bronchial Cysts. J. Preuss.—p. 1823.
Blood Diseases. W. Steinbrinck.—p. 1824.
Treatment of Arsphenamin Injury. R. Deussing.—p. 1824.
Calculosis After Prostatectomy. W. Paetzel.—p. 1825.
Dermatitis from Match-Box. Swars.—p. 1826.
Birth Control Congress in New York. Rohleder.—p. 1828.
Automobile Privileges of Physicians. E. Dochnahl.—p. 1829.


**Epidemiologic Research.**—Prausnitz deals with Wolter's attempt to revive Pettenkofer's theory. He admits that the present knowledge of epidemiology is not complete. Nevertheless much has been cleared up, and for the rest he prefers the theory of changes of virulence of the germs.

**"Reizserum" from Syphilitic Infants.**—Soldin and Lesser produced by cantharidin blisters in infants. They found spirochetes whenever there were cutaneous manifestations of syphilis. This was valuable in cases with a negative Wassermann test. Mercuric chlorid and potassium permanganate killed the spirochetes. Addition of a Wassermann positive serum or of a serum taken immediately after injection of arsphenamin had no influence. No spirochetes were found in new blisters after injection of arsphenamin in the children although those remaining in old blisters were not injured.

## Klinische Wochenschrift, Berlin

**4:** 2089-2136 (Oct. 29) 1925


Sensibility of the Abdominal Cavity. M. Kappis.—p. 2089. C'cn.
*Action of Proteins on Ketonuria. Thannhauser and Markowicz.—p. 2093.
Inhalation Apparatus. W. Heubner.—p. 2099.
*Acroparesthesias. E. Straus and E. Guttmann.—p. 2102.
Scurvy in Guinea-Pigs. K. Schmitt.—p. 2104.
*Endocrine Glands in Pernicious Anemia. A. Mendershausen.—p. 2105.
Antiphlogistic Action of Calcium. E. Lehner.—p. 2106.
The Sachs-Klopstock Reaction. M. Osann.—p. 2108.
Heart and High Altitudes. S. Hediger.—p. 2109.
*The Interbrain in Pemphigus. A. Buschke and H. Ollendorff.—p. 2113.
*Gas Metabolism in Exophthalmic Goiter. Pollitzer and Stolz.—p. 2114.
*Insulin and Tar Cancer. H. D. v. Witzleben.—p. 2115.
Poisoning by Black Radish. C. Bachem.—p. 2115.
Phthisis and Climate. A. Walder.—p. 2116.
Abortions from Standpoint of National Welfare. Engelsmann.—p. 2118.
Vital Statistics from Medical Standpoint. K. Freudenberg.—p. 2135.


**Action of Proteins on Ketonuria.**—Thannhauser and Markowicz administered various amino-acids to patients with grave diabetes. Even leucin, phenylalalin and tyrosin did not increase the ketonuria on low caloric diets. The influence was, however, distinct with diets high in calories. They believe that proteins are ketonogenous only in proportion to their content in these amino-acids. Yet since the rest of the protein is converted into sugar, the patient catabolizes the proteins and fat of his body, which raises the ketonuria indirectly. They find that the formation of acetone bodies is evidence of disturbed oxidation of sugar as the primary change in diabetes. The oxidation of sugar in the muscles does not disprove this. It is an entirely different process from the oxidation in the liver. The glycogen in the muscles, or at least its synthesis and cleavage, may also be different. The disturbance of the utilization of sugar is localized in the liver, and entails consecutive disturbances of the utilization of proteins and fats.

**Acroparesthesias.** — Straus and Guttmann divide their eighty-seven cases of acroparesthesia into two groups: One occurs in individuals between 20-40 years of age and is connected with vasomotor symptoms (cyanosis, white color or edema of fingers). This group is a vasoneurosis. The other type resembles tetany pathogenetically; occurs in the menopause, and presents an exaggerated electric and mechanical irritability of the nerves. Vasomotor symptoms do not occur here.

**Endocrine Glands in Pernicious Anemia.**—Mendershausen found the pituitary, pancreas, suprarenals and gonads practically normal in his thirteen cases of pernicious anemia. He found, however, in twelve of them changes in the thyroid gland (lymphocytic infiltrations with atrophy, occasionally increase in colloid).

**The Interbrain in Pemphigus.**—Buschke and Ollendorff report a case of pemphigus in which Bielschowsky found hyperemia and grave cellular changes in the nucleus paraventricularis.

**Gas Metabolism in Exophthalmic Goiter.**—Pollitzer and Stolz found that the product of the basal metabolism and percental increase of metabolism after intake of proteins

(specific dynamic action) is a constant in normal conditions and in those cases of increased basal metabolism in which the increase is due to changes of central regulation (fever and asthma). This means that an increased basal metabolism causes a lowering of the specific dynamic action. Calculated on a basal consumption of 3 to 4 c.c. of oxygen per kilogram and of a specific dynamic increase of 16 per cent., the constant ("gas metabolism index") would range from zero to 70. It is normal in simple goiter with toxic symptoms, and increased up to 200 in the classical exophthalmic goiter, progressive iodin poisoning and iodin hyperthyroidism. Iodin therapy is contraindicated in the first group. Besides this it is contraindicated in patients who have a high index due only to an excessive specific dynamic action (30 per cent.) in spite of a low basal metabolism. On the other hand, it is indicated in the second group and with nodular goiters which have lost their colloid, in spite of a low index.

**Insulin and Tar Cancer.**—Witzleben tarred three groups of four rabbits. The small wartlike precancer lesions appeared in five weeks in the first (control) group; in nineteen days in the second (injected with epinephrin and glucose), and so far not at all in the third group, injected with insulin.

## Medizinische Klinik, Berlin

**21**: 1635-1672 (Oct. 30) 1925

*Hygiene of the Ear. E. Ruttin.—p. 1635.
*Pneumococcus Peritonitis. G. Wolfsohn.—p. 1638.
*Agranulocytosis. W. Schultz and L. Jacobowitz.—p. 1642.
*Choleresis and the Blood. O. A. Rösler.—p. 1645.
*Birth Injury. A. Wiechers.—p. 1646.
Epidermolysis Bullosa. R. Menzel.—p. 1648.
Hospitalism in Infants. L. Bytsch.—p. 1652.
Cytology of Cerebrospinal Fluid. H. Krey.—p. 1655.
Review on Social Hygiene. Roeder.—p. 1657.
Epidemics in 1924. B. Möllers.—p. 1670.

**Hygiene of the Ear.**—Ruttin warns against cleaning of the meatus with swab and water. It only increases the amount of cerumen. The cleaning or scratching of the ear with hair pins or matches causes eczema and furunculosis. A kiss on the ear easily ruptures the drum-head, as also a slap on the ear. Cotton soaked in oil should be applied before swimming, especially in persons with perforation of the drum-head. The oil soaked pledget prevents infection as well as rupture of the membrane in diving. The infections of the middle ear, due to blowing the nose with both sides closed, are frequent. Noise is an important factor in disease of the internal ear. He observed two deafmute children with no other cause for the deafmutism except the noise of their father's smith-shop, where they were kept during the day, while they were infants. The younger the start in such noisy industries, the graver the injury to the ear. The parenchymatous keratitis beginning at the age of 10-14 in congenitally syphilitic children is usually followed within a year or two by the affection of the internal ear.

**Pneumococcus Peritonitis.**—Wolfsohn observed seven cases of pneumococcus peritonitis. The condition is usually attributed to appendicitis. Early operation is frequently fatal; the prognosis with late operation is good. Application of ether after lavage of the peritoneum can be recommended.

**Agranulocytosis.**—Schultz and Jacobowitz have encountered to date ten cases of agranulocytic angina, and regard only thirteen other cases from the literature as belonging in this category. They emphasize the absence of a hemorrhagic diathesis and of thrombopenia, and the practically normal erythropoiesis. They believe in a primary injury of the leukomyeloid apparatus.

**Choleresis and the Blood.**—Rösler counted the blood for four hours after intravenous injections of a sodium salt of phenylcinchoninic acid in twenty five patients with jaundice. He found a marked lowering of the erythrocytes and increase in leukocytes, especially the neutrophils. He believes that an increased destruction of erythrocytes took place.

**Birth Injury.**—Wiechers shows that the majority of infants who die in the first days have grave injuries of the brain. The favorite clinical diagnosis in these cases was "premature" or "congenital debility." The same injury causes death in the second two weeks of life, the favorite diagnosis then being atrophy, purulent bronchitis, pneumonia or malnutrition.

## Münchener medizinische Wochenschrift, Munich

**72**: 1863-1906 (Oct. 30) 1925

Biology of Tuberculosis. A. Jesionek.—p. 1863. C'cn, p. 1921.
*Skin Reactions to Rays. G. Schwarz.—p. 1867.
Iodin and Blood Pressure. Engelen.—p. 1869.
Pneumothorax. F. Serio.—p. 1870.
"Duodenal Pylorus Reflex." F. Rabe.—p. 1872.
*Advantage of Colon Bacilli in Intestine. O. Loew.—p. 1873.
*Bone Changes in Spastic Paralysis. C. Rohde.—p. 1874.
Sedimentation Test in Lead Poisoning. Schnitter and Paris.—p. 1876.
*Potassium Treatment of Retention of Urine. H. Reimer.—p. 1876.
Physical Examination of Students. R. Jung.—p. 1877.
Dosage in Homeopathy and in Regular Medicine. R. Meissner.—p. 1882.
*Sympathectomy in Bronchial Asthma. M. Rehbein.—p. 1885.
The Schede-Habermann Artificial Leg. Pürckhauer.—p. 1885.
The Teeth in Congenital Syphilis. H. Fabian.—p. 1886.
Strangulation of Finger and Penis by Long Hair. Grosse.—p. 1887.
*"Epidemics, Soil and Climate." E. Schilcher.—p. 1888.
*History of Phrenicotomy. D. Hellin.—p. 1888.
"Intensity of Therapeutic Light." H. Bach.—p. 1889.
The Spiritual War Against Germany. Rimpau.—p. 1889.
Curiosa from an Old Medical Book. Doll.—p. 1890.

**Skin Reactions to Rays.**—Schwarz found that the secondary latency period is not limited to erythemas due to the action of ultraviolet or roentgen rays. He found the same phenomenon after application of mustard oil on the skin, the only difference being in the speed: hours in mustard oil dermatitis and weeks after the roentgen rays. There is also an analogy in the Pirquet test. He believes that these reactions are manifestations of a tissue allergy.

**Advantage of Colon Bacilli in Intestine.**—Loew points out that colon bacilli are capable of converting ammonia into proteins, and thus protect the organism against the ammonia.

**Bone Changes in Spastic Paralysis.**—Rohde found in six of his seven grave cases of Little's disease changes in the bones (three cases) or in the joints. He explains the former by new formation of bone where the contracted muscles have a broad and well vascularized attachment to the periosteum and bone.

**Potassium Treatment of Retention of Urine.**—Reimer had further good results in postoperative retention of urine. He administers 1-2 tablespoonfuls of a solution of 60 gm. of potassium acetate in 300 gm. of water. In obstinate cases he adds one spoonful every half hour. In 150 cases this treatment proved successful in 64 per cent. (50 per cent. in women; 70 per cent. in men). The remedy is of no use with motor insufficiency of the stomach.

**Sympathectomy in Bronchial Asthma.**—Rehbein expects success with sympathectomy in those patients with bronchial asthma who experience relief when the cervical ganglions are anesthetized. He found a tenderness in that region in such cases.

**"Epidemics, Soil and Climate."**—Schilcher traces the epidemic of influenza in Finland exclusively to a shipload of Bavarian soldiers who arrived there in June, 1918.

**History of Phrenicotomy.**—Hellin claims priority in having demonstrated the futility of phrenicotomy in treatment of pulmonary tuberculosis, as made by Sauerbruch.

## Wiener klinische Wochenschrift, Vienna

**38**: 1151-1176 (Oct. 22) 1925

*The Vienna Water Problem. R. Grassberger.—p. 1151.
*Diabetič Glycosuria. H. Schur and F. Kornfeld.—p. 1153.
*Professional Disease and Injury by Electricity. Jellinek.—p. 1155.
Raising the Prematurely Born. E. Stransky.—p. 1157.
*Conjugal and Syphilitic Exophthalmic Goiter. J. Koopman.—p. 1159.
Embolic Bismuth Injury. M. Wolf.—p. 1160.
"Glucose Value of Food." W. Falta.—p. 1161.
Public Demonstrations of Hypnosis, etc. Wagner-Jauregg.—p. 1163.
Treatment of Itching Dermatoses. G. Nobl. Supplement.—pp. 1-24.

**Vienna Water Problems.**—Grassberger describes the so far unsuccessful fight of the Hygienic Institute of Vienna and of the public health service against the intended endangering of the purity of the water supply. The chief expert of the opposing party is a geologist whose ignorance and superstitious delusions (divining rod) were shown up in flagranti by the author nine years ago.

**Diabetic Glycosuria.**—Schur and Kornfeld found that the glycosuria occurs with low blood sugar in true diabetes. They

attribute the absence of sugar in the normal urine to its complete oxidation in the kidney. They believe that it appears in the urine in diabetes because the kidney is unable to use it.

**Professional Disease and Injury by Electricity.**—Jellinek points out that most of the persons seemingly killed by electric currents can be successfully revived. Yet the artificial respiration is frequently done in a way which kills the injured (aspiration of gastric contents in lungs). Electric wounds heal surprisingly well and radical surgery is contraindicated.

**Conjugal and Syphilitic Exophthalmic Goiter.**—Koopman emphasizes the necessity to think of a syphilitic etiology in exophthalmic goiter. Iodids have a surprising effect in these cases.

### Zentralblatt für Chirurgie, Leipzig

**52:** 2466-2512 (Oct. 31) 1925

Prolonged Intravenous Infusion. E. Eick.—p. 2466.
*Treatment of Soil Infected Wounds. O. Acklin.—p. 2470.
Primary Intestinal Cellulitis. E. Metge.—p. 2474.
Blood Transfusion. O. Jüngling.—p. 2475.
Surgery of Tumors of Esophagus. A. Melnikoff.—p. 2479.
Treatment of Varicocele. F. Franke.—p. 2483.

**Treatment of Wounds Infected by Earth.**—Acklin infected guinea-pigs with earth containing spores of tetanus bacilli. The animals recovered if he introduced at the same time animal charcoal or colloidal aluminum hydroxid.

### Zentralblatt für Gynäkologie, Leipzig

**49:** 2385-2448 (Oct. 24) 1925

*Mechanism of Menstrual Bleeding. H. Hinselmann.—p. 2386.
The Pseudohermaphrodite Question. Hoepke and Oettingen.—p. 2388.
Cervical Tears in Spontaneous Delivery. A. Hermstein.—p. 2401.
*Sterilization by Double Vagina. P. Haendly.—p. 2404.
Early Sign of Pregnancy. F. Lönne.—p. 2406.
Hydrops of Fetus and Placenta. C. Becker.—p. 2409.
Gymnastics for Women. W. Wiegels.—p. 2412.

**Mechanism of Menstrual Bleeding.**—Hinselmann observed under the magnifying glass a rhythmic expulsion of the blood from the menstruating uterus. For instance, in the first hour of the first day he counted within a thousand seconds 12.6 expulsions, representing a total period of twenty-seven and two-tenths seconds.

**Sterilization by Construction of Double Vagina.**—Haendly recommends to form a very narrow anterior tunnel communicating with the uterus, and a broad blind posterior portion of the vagina, serving for coitus, without any communication with the uterus.

**49:** 2449-2512 (Oct. 31) 1925

*Thyroid Function in Dysmenorrhea. W. Schmitt.—p. 2449.
Hematomas of Vulva and Vagina. H. Krause.—p. 2465.
Unusual Case of Chorio-Epithelioma. H. Schimmel.—p. 2469.
*Ileus in Pregnancy and Labor. A. Abrahamsen.—p. 2476.
Temporary Roentgen-Ray Sterilization. H. Behrendt.—p. 2488.

**Thyroid Function in Dysmenorrhea.**—Schmitt found among forty cases of dysmenorrhea twenty-two with increased and seven with decreased basal metabolism.

**Ileus in Pregnancy and Labor.**—Abrahamsen's case shows that ileus late in pregnancy may be due simply to pressure of the uterus on the intestine.

### Časopis lékařů českých, Prague

**64:** 1537-1572 (Oct. 24) 1925

Hypnosis and Crime. F. Berka.—p. 1537.
*Roentgen Study of Ileocecal Region. R. Nekula and J. Šimon.—p. 1540.
Signs of Full-Term Fetus. V. Rubeška and V. Káš.—p. 1544.
*Resection of Liver in Cancer. Haim.—p. 1550.
*Influence of Iodin on Rats. I. Mačela.—p. 1551.
*An Insulin Which Does Not Cause Spasms. I. Mačela.—p. 1553.
Weakness of the Retina. M. Remeš.—p. 1556.
Biologic Testing of Arsphenamin. A. Mládek.—p. 1560.

**Roentgen-Ray Study of Ileocecal Region.**—Nekula and Šimon studied more than 100 patients with disturbances in the ileocecal region. The appendix had been removed in twenty of them, yet the distress was not diminished. They found a slow evacuation of the cecum in perityphlitis. Twenty-four hours and longer after the ingestion of a contrast meal the lower part of the cecum was still filled. A spasm of a cecocolonic muscular ring was observed several times. Atropin relieved the stagnation in these cases. A motor insufficiency of the distal part of the ileum may cause gaping of the ileocecal valve. Organic processes such as adhesions and abscess can be studied roentgenologically. A filling of the appendix speaks for chronic appendicitis only if the appendix is tender on pressure. If conservative treatment fails, they recommend appendectomy, severing adhesions and eventually fixation of the hepatic flexure. Fixation of the cecum would only aggravate the condition, if the hepatic flexure were still free or displaced downward.

**Resection of Liver in Cancer.**—Haim resected successfully a lobe of the liver infiltrated by a cancer of the gallbladder. He emphasizes that metastasis involving only one lobe of the liver does not contraindicate a radical operation on a cancer of the gastro-intestinal tract.

**Influence of Iodin on Rats.**—Mačela added 0.2 mg. of sodium iodid daily to the food of young rats. They gained in weight faster than the controls, and showed a rapid sexual development.

**An Insulin Which Does Not Cause Spasms.**—Mačela obtained by a modification of the Dodds and Dickens method a fraction of insulin which lowers the glycemia extremely but does not cause convulsions.

### Acta Medica Scandinavica, Stockholm

**62:** 379-580 (Oct. 24) 1925

*Cancer and Diet. M. Hindhede.—p. 379.
Glycosuria with Meningeal Hemorrhage. L. Nicolaysen.—p. 392.
"Terrace" Pneumothorax Effusions. G. Edström.—p. 395.
Tumor of Fifth Cervical Segment of Cord. N. Ahlen.—p. 400.
Dosage of Sanocrysin. K. Lehotay.—p. 424.
Multiple Tumors in Muscles. F. Sundelin.—p. 442.
Tonic Labyrinth-Eye Reflexes. R. Lorente De No.—p. 461.
Hemorrhage Diatheses. H. Becks.—p. 474.
Syphilis and Paroxysmal Hemoglobinuria. E. B. Salén.—p. 521.
*Wassermann Reaction in Paroxysmal Hemoglobinuria. Salén.—p. 558.

**Cancer and Diet.**—Hindhede was struck by the high incidence of cancer in Denmark (151 deaths per hundred thousand inhabitants in 1915). Fully 17 per cent. of the persons who have completed their forty-fifth year die of cancer in Denmark. He attributes this to the excellent and more than sufficient food which prevails there. The English farm laborers, with their low protein fare, have a very low death rate from cancer. That of physicians is much higher. He believes that irritation of the digestive tract by decayed, strongly salted and spiced food, alcohol, tobacco, overeating and a food rich in animal protein are the main causes of cancer.

**Wassermann Reaction in Paroxysmal Hemoglobinuria.**—Salén found that the hemolytic amboceptor causing the Donath-Landsteiner reaction is of no influence on the Wassermann reaction in paroxysmal hemoglobinuria.